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THE

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FOR 1861.

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Ars Veterinaria post medicinam secunda est.—*Vegetius.*

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THE

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Communications and Cases.

ON POISONING BY VEGETABLES.

Our attention has lately been directed to the fact that there is much which is unsatisfactory respecting the poisoning of animals by vegetables. Their effects are often very variable, and the lesions they cause are sometimes so inconsiderable as altogether to escape detection. Of course, in some degree, this will depend upon the class to which they belong; that is, whether they are irritant, or narcotic, or narcotico-acrid poisons. Moreover, the character of the lesions will not be decisive, inasmuch as an irritant metallic poison will, if given in repeatedly small doses, produce effects similar to those that result from a narcotico-acrid vegetable poison; while the implication or otherwise of the peritoneal tunic of the intestines has long since ceased to be considered a distinction between poisoning by minerals and vegetables. Then how very difficult is it to decide upon the particular plant or vegetable which has been productive of the mischief, unless it should be that the digestive powers are weak, or the quantity given or partaken of is large, and some of it is found in the stomach or alimentary canal unacted upon. Then it is that a knowledge of the botanical characters of plants is indispensable. It is true that the principles of chemistry may be brought to bear so as to develop the active principle of the more well-known poisonous vegetables. But what amount of labour does this frequently involve? more especially when—as almost always is the case—the agent has undergone mastication and partial digestion, and is commixed with a mass of other ingesta; this, whether in the stomach of the horse or the rumen of the ox tribe, although in this latter it is not

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likely to have undergone the same change that it has in the former. But if we have to search for it in the intestines, then the difficulty becomes still greater; and after having obtained the vegetable matter we must proceed to develop its alkaloid by certain methods laid down, which are often very operose, while they call for a familiarity with chemical manipulation not possessed by all.

Further, there is the fact to be borne in mind that, when the quantity of the poisonous vegetable is but small and mixed with the animal's provender, the digestive process will cause its assimilation to take place, in part or wholly, and then we have to look for its influence upon remote organs. This, too, is often even more unsatisfactory than the former, unless it be that the larger organs, as the liver, or the kidneys, or the brain, be those to which the active principle is determined. We are aware that to produce its effects it must exist in the blood; but to search for it there would add immensely to our labours.

Another circumstance must also be taken into consideration, namely, that disease frequently modifies the action of most agents. This, in all probability, is often the cause of the variable effects produced by the same agent; nor must it be forgotten that the same substance will not produce the like action, even in animals of the same class, at all times: of which we have an illustration in the present number, recorded by Mr. Howell, respecting the influence of the hollyhock.

We must, however, be permitted to add another reason why difficulties present themselves in knowing if animals be poisoned by vegetables, although the subject is a delicate one, namely, the want of due and careful observance on our part of every peculiarity in the action produced, likewise of the changes effected in the tissues and certain organs of the frame, a recording of the same, and then giving to the whole publicity. Yet we think we see an improvement taking place here, and we hope it will continue. We have alluded to it elsewhere, that during the past year several interesting cases of poisoning were communicated to us by Mr. Fuller, Mr. Litt, and others, which will hereafter be referred to with confidence by the profession. Other isolated cases may likewise be found in the pages of our Journal that are full of instruction; still we are quite sure that these, from time to time, could be added to, were each to do his duty; and then might a classification be attempted, which would redound to our credit.

Oftentimes during life a considerable difficulty presents itself in tracing out the true plant or vegetable that has been pro-

ductive of the mischief. It has not been partaken of by the animal accidentally in his food, but it has been given to him clandestinely, in that love of quackery so rife among grooms and stable-men, either for the purpose of getting their horses into condition, so called, or as a vermifuge. Hence, too, arises a difficulty as to the treatment to be adopted. When we know for a certainty what vegetable has been administered, we can resort to the use of a counter-poison or antidote, and by its timely introduction ward off the injurious consequences that otherwise would take place, and also by other means effect its ejectment; but it is otherwise when we are ignorant of the agent. It is well, therefore, to know that, under such circumstances, there are certain substances that may be employed from which it may be anticipated that benefit will result, while in themselves they are innocuous, or comparatively so. The first of these is *animal charcoal,* prepared, from bullock's blood by fire. This may be given diffused in water, by means of the stomach-pump, or some other way, in almost any quantity. It has been ascertained to possess the property of rendering inert the vegetable alkaloids, and also to cause a precipitation of most of the metals from their solutions. Common bone or ivory black does not possess one fifth part of the antidotal power of this form of animal charcoal, and vegetable charcoal is far less efficacious. It has been thought that carbon in this state would even destroy the poison of rabies, serpents, &c., if it were applied in the form of poultice to the wound.

The second agent is *tannin,* or tannic acid, the astringent principle obtained from the gall-nut, and other sources. This has been lately found by experiment to be an antidote to even strychnia. It may be given in large doses, and is said to act as a general antidote to the vegetable alkaloids by combining with them and forming a precipitate more or less insoluble. Excess of it, however, has been stated to bring about the solution of this precipitate, which is the only objection that has been raised to its employment.

We need not add that there are other expedients to be had recourse to, but these the judgment of the practitioner will be at no loss to supply as the circumstances arise requiring them.

ON THERAPEUTICS.

By Professor Brown, M.R.C.V.S.,

Royal Agricultural College, Cirencester.

(*Continued from vol.* xxxiii, *p.* 701.)

Constipation may arise, first, as a consequence of an accumulation of indigestible food. In such a case purgatives, by increasing the secretion and movements of the canal, at once furnish the condition for a cure, as the object is to soften the mass, and consequently enemas, and agents in solution, or oleaginous purgatives, are to be preferred.

Secondly, constipation occurs from defective or perverted action of the liver, as instanced in the well-known disease called redwater, in cattle. In this affection the object is to increase the natural secretion from the gland, and in so doing to remove the constipation. But to purge merely for the sake of opposing such constipation would be exceedingly empirical treatment. It may be the case that a violent purgative action shall sympathetically affect the liver, and thus excite the secretive function of that organ, but the cure of the disease does not necessitate the employment of strong cathartics. The action of the Extract of Taraxacum we have always found sufficiently decided, given in doses of half an ounce, with three or four ounces of sulphate of magnesia, and continued once a day until a relaxed state of the bowels results, after which the purgative may be with advantage omitted.

Thirdly, in the fever attending all active disease and excitement of the system, constipation is frequently present; also in the dry stage of catarrh, in inflammation of various parts, in cases of wounds or injuries of any kind, and after operations. The general defect of secretion is sufficiently proved by the dry condition of the skin and external membranes. Under these circumstances, presuming no contrary indications are present, mild purgatives, and particularly those of a saline nature, may be resorted to with the view of restoring the defective secretion. At the same time we must be allowed to observe, that very rarely in these cases is purgation indispensable, as the dry condition of the membranes yields as readily to the use of aconite, diluents, and a moist diet. Purgatives, in the ordinary acceptation of the term, would very often be exceedingly injurious at the time when

the mucous track is predisposed to inflammation; so that when used at all, great caution is necessary both in selecting the drug and apportioning its dose. If it be understood that the object is to diminish fever, and not merely to overcome constipation, these agents will be more considerately employed than they have been.

Fourthly, we find constipation to result from defective nervous and muscular action; in paralysis, and general debility, and the disease "dropping after calving;" the "puerperal apoplexy" of Professor Simonds.

In the case of constipation occurring from debility, we presume no discussion is necessary, as no reflecting person would think of giving purgatives in such a state of the system, excepting it may be in the form of dietetics. In the other cases, constipation is the consequence of diminished nervous action, and the argument is, "if you can excite the membrane of the intestines, you help to restore nervous function," a sentence we would modify by saying, "if you can excite nervous function you restore at once the action of the intestinal canal." The question then occurs, are purgatives the best medicines for this object? And the answer is,—No! as they can hardly be expected to effect any alterations in a part where the nerves are incapable of receiving or conveying an impression. Thus we find purgatives in these diseases scarcely to act at all, or not until a certain amount of nervous action is restored by a more direct course of stimulation. Even at the commencement of the disease, puerperal apoplexy, during the preliminary excitement, when their action would be sufficiently decided, we have not found them to be necessary, as a more satisfactory effect is produced by aconite, which by diminishing the nervous action prevents that congestion of the brain and spinal cord which otherwise might occur. In paralysis, the same reasoning will hold good. Constipation is the simple result of defective action, and will cease shortly after such defective action is removed; and as purgatives expend their influence upon the nerves of the intestines, without influencing the nervous system generally, we cannot understand the benefits expected from their action.

Fifthly, constipation is present frequently in ordinary spasm, and in tetanus. In both cases, probably from an interference with the movements of the intestines, combined with the fever that is also commonly present, which diminishes secretion; the perversion of the muscular action we assume to be the prominent cause. Here again purgative action seems to us to be altogether ineffective. The indi-

cations are suggestive of a plan of treatment directed to the removal of the excited muscular irritability by sedative agents. How frequently do purgatives fail to act in tetanus at all; and although it is generally considered that the chances of recovery are much greater when purgation is established, may this not be owing to a spontaneous amelioration of disease before the action commences? an idea exceedingly reasonable when we consider how rarely any action is perceived while the affection continues unabated.

In the therapeutic system of a now defunct school, bleeding, purging, blistering, and clystering, were the four corner stones. A more enlightened age refuses to submit its sick and wounded to such merciless handling as they were wont to meet with. A growing perception of the fact, that all disease is connected with debility, is leading to the adoption of more humane, less active, and more successful methods of treatment. The restorative power of the organism is becoming more understood, and among the qualifications of the physician patience begins to rank highly; patience to investigate and to watch for the opportunity of affording the assistance that might embarrass if volunteered injudiciously.

During our discussion upon cathartics, we have rather opposed their exhibition in cases where they are usually employed, than suggested the occasions where their action would be beneficial. Our conclusions upon this part of the subject may be concisely given.

Purgation we deem advisable when it is desired to remove something from the intestinal canal; therefore, in cases of poisoning by mineral or vegetable agents that are not immediately absorbed, or when any insoluble body has been accidentally swallowed, or when any inconvenience follows the consumption of a large quantity of food, or during the existence of parasites in the stomach or intestines, cathartics, more or less active, are indicated.

In cases where any habitual evacuation is suddenly arrested, as instanced in the cessation of discharges from ulcers, or from morbid growths, or even from setons or rowels that have been continued for very long periods, the compensating action of a purgative is often beneficial. Saving in these cases and those of a similar kind, we consider purgative action fully developed to be unnecessary or injurious. It is so we have endeavoured to show during debility, even though constipation be present.

In spasm and tetanus we have not advocated the employment of cathartics, from the conviction that the principal

elements of these diseases are not of a nature to require agents of the first group at all; the mere removal of the constipation is all we can expect even under the most favorable circumstances. This result is of trifling consequence compared with the more immediately beneficial effects of sedatives, which attack the prominent elements of these maladies, besides that their use is consistent with the system of allopathic treatment. The *ad captandum* arguments about "relieving the system by unloading the bowels," and cleansing the stomach, &c., fail to impress us. The necessity for a healthy action of the intestines we perceive, but not the necessity for purgation as the most available method of restoring it.

The use of purgatives in cases of paralysis and coma we oppose for similar reasons. These diseases consist in defective or suspended nervous action, and are only consistently treated by medicines, or other agencies, which are capable of stimulating the nervous system. Purgatives, as far as we know, possess no such capability, and are therefore only employed from custom, or for the purpose of overcoming constipation which is a consequence of the suspended nervous functions; and, as we have said, is removed spontaneously as soon as those functions are restored.

During any system of training, the action of cathartics cannot but be injurious, where none of the reasons we have given for their use are present. Nor is their exhibition more justifiable when the object is to prepare an animal for a surgical operation. In fine, active purgation seems to us to be desirable only under the circumstances we have mentioned, viz., where something is to be removed from the alimentary canal, or some habitual discharge to be temporarily represented by a new one thus artificially induced.

Cathartic agents, however, we do not hesitate to exhibit in small doses, in a variety of diseases where the different secretions are defective. In such cases we confess to a preference for calomel, and the saline purgatives, whose diffused action is so much more effective than a local one in febrile cases. Enemas are next in importance; they are innocuous, a rare merit, and most valuable in constipation from defective muscular action of the rectum. Aloes, croton, and oils, we should employ in those few cases where we desire to produce full purgative effects.

In concluding this section of our subject, we are anxious to avoid the charge of having taken an extreme view of the matter under discussion. Purgatives are so popular as remedies for everything, that to stigmatise them as injurious

seems like an interference with the liberty of the subject. We beg, however, to disclaim any such intention; the man who indulges in the pleasures of an elaborate "cuisine," may oppose the "bane" of to-night by the "antidote" of to-morrow morning, in the form of the Seidlitz powder or the antibilious pill. If, in his view of life, "the bane and antidote are both before him," by all means let him, the reasoning being, the voluntary agent, make his choice, but let us not thrust his system upon our animals, who have no choice but to submit. The convictions we have advanced have been deliberately formed. If they seem to some crude or violent, we shall regret it; but, at the same time, we cannot help that our idiosyncrasies permit us to contemplate with complacency a state of society when "Old Parr shall be forgotten, and Morrison's pills unknown."

STIMULANTS.

Stimulant medicines are those which produce general excessive action. The various agents have an influence upon the nervous system so decided that excitement follows immediately upon their introduction into the system; the effects will be proportioned to the amount or activity of the agents used, and to the susceptibility of the system. Animals that are suffering from debility are particularly affected by stimulants, although in *extreme* exhaustion large doses are required to produce any action at all. Primarily, stimulants excite the nervous functions, particularly the reflex; consequently, the various organs under the influence of this system are markedly affected; thus, secretion, circulation, nutrition, and even volition, are rendered active. The secondary consequences of excitement we have already alluded to. Those consequences occur without any reference to the causes of the excitement; in proportion, therefore, to the amount of stimulation will be the amount of depression. In discussing purgative action, we had occasion to protest against the full development of the properties possessed by the different drugs; the same restriction we impose upon the exhibition of stimulants; for however valuable as therapeutic agents, when administered judiciously, their full action is seldom or never desirable. Very large doses, indeed, seem to produce opposite effects, causing unconsciousness, and even death from "coma."

The drugs possessing the property of stimulating or exciting are sufficiently numerous; and, although united in

some degree by their power of causing excessive action, they differ in the methods and extent of their action.

Alcohol, or any of its compounds, stimulates the brain and voluntary nerves. Ammonia, or its carbonate, is less decided in its effects upon the nervous functions, although a most effective agent in cases of deficient circulation. Capsicum, ginger, pimenta, and numerous spices classed as "cardiacs," produce a direct effect upon the nerves of the stomach, causing an increased secretion, and ultimately extending the stimulant effect over the system, producing a sensation of diffused warmth, arising from the improved activity of the nervous and circulatory functions.

Mercurial salts stimulate glands, particularly the liver and salivary glands, without occasioning any general excitement.

Iodine and its compounds also stimulate glands in the first place, but have the peculiar, and sometimes inconvenient, property of subsequently causing their absorption. Iodine has the further peculiarity of acting directly upon diseased textures in preference to healthy ones, and, for this reason, is a most valuable therapeutic.

Ergot of rye may be included in our list, although its action is only developed under peculiar circumstances. It possesses the specific power of exciting the muscular irritability of the gravid uterus, and is only employed in those cases of difficult or prolonged parturition arising from defective muscular action of the organ. The term parturient is given to the agent on this account.

Stimulants acting upon the surface of the body will more conveniently be discussed under "counter-irritation."

In the treatment of spasm the irregular muscular contraction is corrected by the action of stimulant agents, probably in consequence of the origination of a new impression upon the nerves, and an improvement in the circulation of the part; under such circumstances the agents are classed as "antispasmodics."

Under the general term stimulant we have, therefore, a number of agents possessing very varied capabilities; the selection of any one will be regulated by the necessities of the case.

Alcohol, from its influence upon the general nervous system, is useful in general depression.

In congestion, where there is a viscid condition of blood, with nervous depression, ammonia is indicated; its volatility and alkaline reaction particularly adapt it for such cases, irrespective of its presumed influence upon the blood's fluidity.

In acute exhaustion (if we may so term it)—we mean that

exhaustion which follows upon sudden and excessive exertion or exposure to cold—the various cardiac stimulants are efficacious.

In defective glandular action, including defective absorption as well as defective secretion and excretion, mercury and iodine compounds are required.

In intestinal spasm, as we have stated, ethers, alcohol, and spices are usually effective; but, owing to the circumstance that inflammation frequently supervenes upon spasm, it is more judicious to employ narcotics and sedatives, which are equally effective, and at the same time their exhibition is more consonant with true principles, which will be to a certain extent violated by the use of stimulants in any case of excessive action, of which spasm is certainly an instance.

In accordance, then, with our expressed intention of adhering to the laws of the allopathic system, we employ stimulants in cases of defective action, general or local. The symptoms of such defect are, for the most part, sufficiently definite to prevent an erroneous conclusion, notwithstanding excitement is by no means an infrequent indication of debility, albeit a deceptive one; it may, therefore, be advisable to consider the circumstances under which stimulant treatment is desirable.

General debility arises from a number of causes that hardly require enumeration — insufficient or bad food, excessive exertion, continued excessive secretion, suppuration, continuous pain, disease, chronic or acute; in fact, everything that disturbs the system, affects the nutritive functions and causes weakness.

The ordinary indications of constitutional debility are emaciation, incapability of supporting exertion, irregular appetite, irregular secretion, and dropsical effusion. In such a state of system digestion is imperfectly performed, and the circulatory and nervous functions are defective, although transiently excited by the most trifling causes. Nutriment, although supplied in the most available form, is useless, from the general inactivity of the system. Stimulants at once effect an improvement, but only of a temporary nature, and, as we have seen, are likely to add an additional depression after their primary action has subsided. To obviate this the system of small and frequent doses is absolutely necessary; the temporary excitement following a single full dose, although at first exceedingly satisfactory, cannot but increase the mischief, while the action of the small dose, constantly administered, is less manifest but more permanent. Exhaustion is a form of debility resulting from over excitement

of any kind. The depression is commonly extreme, although, from the absence, probably, of any positive disease, only temporary. Debility from excessive secretion, and exhaustion from excessive exertion, are sometimes accompanied with symptoms of excitement—a quick, thin pulse, panting, and perspiration. Such symptoms, however, are not likely to deceive if the causes be taken into account.

In all these cases we perceive a general depression, which, however, we repeat, does not exclude the possibility of a temporary excitement: such depression may be removed by the spontaneous action of the system. In cases of exhaustion a rest, sufficiently prolonged, is ordinarily followed by restoration; but where the depression is consequent upon constitutional disease, involving defective circulation and nervous action, with impaired digestion, as a necessary consequence, the system is not equal to the necessary effort without medicinal aid, in the shape of something which shall rouse the inactive nerves and supply the required excitement. Stimulants, we find, possess just the action we desire, and hence their value in those instances of exhaustion or extreme debility where nervous action is almost suspended. We are not opposing the employment of other means; tonics and dietetics will be called for before we succeed in effecting a cure; but these agencies would frequently be inoperative in the state of system we are describing, as they require for the development of their properties a certain nervous impressibility which is absent, and which stimulants alone possess the power of re-establishing.

Defective action may present itself as a local disease, and influence the system through the medium of an important organ.

Congestion of brain is, of course, synonymous with general nervous depression, and, consequently, universal inactivity of system.

Congestion of lungs, including defective oxygenation, is soon followed by diminished nervous action and general defect of function.

Defective glandular action is associated with impaired secretion and absorption, and these involve deranged nutrition.

In these varied conditions of diseased action the whole list of stimulants will be brought to bear; not only medicinal agents, but whatever will produce the desired effect, may be legitimately employed, according to the urgency of the case. Internal remedies may be assisted by external applications. Counter-irritants, electricity, galvanism, and, before all, the

stimulus of pure air, in artificial respiration, exert a marvellous influence. The records of cases of suspended animation show the wonderful progress science has made in the treatment of cases where none but the most sanguine could see a gleam of hope—where hours have been occupied in efforts that still seemed fruitless; and yet a "saved life" has at last rewarded the untiring patience that calmly works in the faith of correct principle, in apparent ignorance of the existence of the "impossible."

The theory which shows all disease to consist in depression, and to be therefore treatable by stimulants, is too sweeping in its clauses to be absolutely true; but we ask practitioners of the veterinary art to look to it, whether or not these agents are estimated as they merit, as they are estimated in human medicine.

SUPPOSED RUPTURE OF THE ŒSOPHAGUS.

By B. Cartledge, M.R.C.V.S., Sheffield.

On September 18th my attendance was requested on a bay farming-horse, five years old, belonging to Frederick Hunt, Esq.

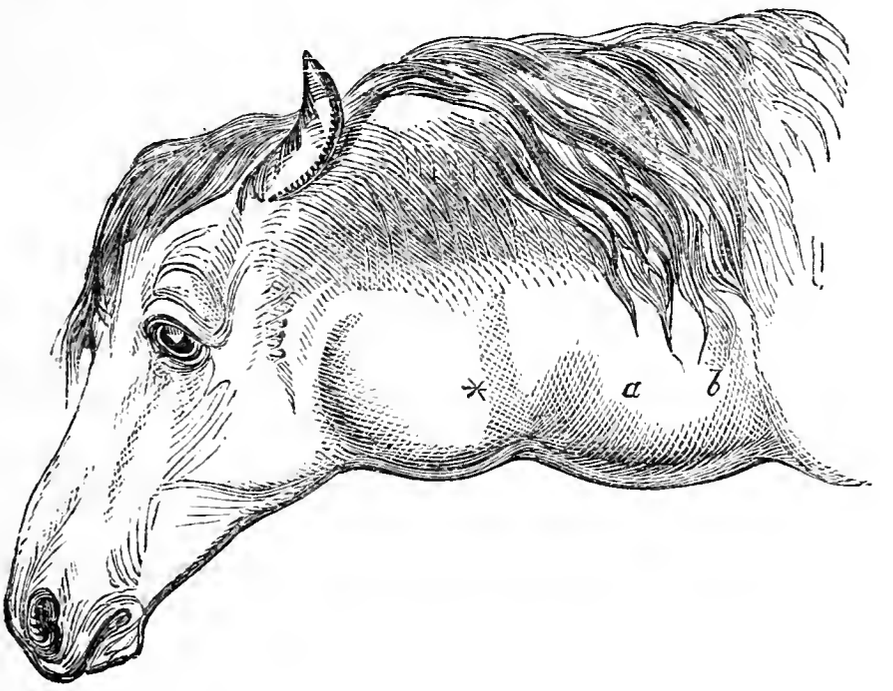
The account given by the man was, that the animal had a cough, and, after drinking, a swelling appeared in front of the neck, which seemed to him in some measure to give rise to the coughing. In most other respects he thought the horse was in tolerably good health.

When I first saw the horse I could not detect the swelling alluded to, although I had him led to the trough, and he drank freely. The pulse gave no indication of disease. The animal was feeding well, and in the absence of any unfavorable symptom, I merely directed a stimulant to be applied to the throat, with a view to relieve the cough, and gave an alterative.

A few days afterwards, as my assistant was passing the place, I desired him to call; and he, like myself, saw nothing amiss with the horse. He therefore sent him to work, and requested that we might be informed if the animal did not g on well.

Until the 11th of October I heard nothing more of him, and of course inferred that there was no further cause for complaint. On that day, however, the owner called upon

me, and stated that the horse was very unwell, and he feared a fatal termination; and, for my greater convenience, the animal having previously been a considerable distance from Sheffield, he had had him brought to another farm close to the town. I went at once to see him; found the animal rather low in condition, but he was still feeding well; his coat also stared, but there was no constitutional disturbance present. The enlargement before alluded to, however, was now visible enough, and put on the appearance given in the subjoined sketch.



There was no pain expressed on pressure being applied to it. Its contents were also moveable, but could not be made to disappear. During the act of drinking, the swelling materially increased in size, and extended from the sternum to the angle of the jaw, giving to the parotid gland the appearance of a large tumour. This, however, existed only during the time the head was placed towards the ground, and while the animal was drinking. It produced an occasional sense of suffocation, when the animal discontinued drinking for a few seconds, in which time relief seemed to be obtained, and the swelling decreased in size. The swallowing, however, being renewed, brought about a repetition of these symptoms.

My first impression was, that the swelling arose from a serous abscess; but I soon found that the sac was deep seated, and that my theory was not tenable. I then asked myself if the œsophagus could be ruptured; and thought, if this were so, food, as well as water, would pass through the opening, and great pain and inconvenience would be occasioned when eating; but this was not the case. Was it

a dilatation of the œsophagus? The objections to this view were, the sac was so large, and it extended beyond the limits of that tube. I ascertained that it could not be a ruptured blood-vessel, nor did it contain pus. What was it, then? I confess I felt puzzled.

The same day I took Dr. Elam, a medical friend, to see my patient, hoping he would help me out of my dilemma. The case to him was a very singular one, and he stated he knew nothing analogous to it in the human subject. After passing in review, and dismissing, for similar reasons to my own, the probability of its being a rupture of the œsophagus or of a blood-vessel, a dilatation of the œsophagus, or a sac containing either pus or serum, he came to the conclusion that there was a puncture, or partial rupture, of the trachea, and that at each inhalation air passed through this opening, and thus the sac was filled. At once my friend made a convert of me; and, although this theory was scarcely reconcilable with some peculiarities that existed in the swelling, I was glad to hear a suggestion that had at least novelty to recommend it.

No change took place in either the size of the swelling or in the horse's state of health for some days; but on one occasion the man in attendance observed that he appeared uneasy after having eaten a little bran-mash, and on giving him some water he walked round his box, lowered his ears, and deliberately vomited, the water, however, being only returned. This at once relieved him, and he immediately resumed his feeding.

I now asked Mr. Henry Jackson, Senior Surgeon to the Sheffield General Infirmary, and a lover of comparative anatomy, to see our patient. He, with Dr. Elam and myself, considered the case a very strange one, but at once expressed his belief that the swelling could not be filled with *air!* He nevertheless confessed that he did not know what it could be.

There now began to be a little variation in the size of the enlargement. At one time it was smaller than it had been before, and at another it had evidently increased considerably. For further convenience, I had the animal brought to my own stables; and on the 28th of October, Dr. Elam, Mr. Henry Jackson, Mr. W. F. Favell, and Mr. Henry Thomas—part of the medical staff of the infirmary—met in consultation over this remarkable case. By their general consent, I passed a probang into the stomach, and I experienced little difficulty in doing so. After some further consideration, it was decided that an exploring needle should be passed into the sac (*a*, in the drawing). Accordingly I

did so, and the sac was reached at a depth of about two inches. A small quantity of colourless fluid escaped through the groove of the needle, which smelt of hay. The general impression arrived at was, that there was a rupture of the œsophagus at about the point indicated by the * in the sketch, and that there was a stricture also at the lower part of that tube before it enters the chest (*b*). No one, however, spoke very positively on the matter. Five days afterwards I summoned the medical gentlemen again for another consultation, a marked change having taken place. The previously fluctuating mass had become a solid, compact substance; the part was tense and much more swollen, and pressure on it gave great pain. The swelling in the front of the chest partook more of the ordinary character of œdema than that at the upper part of the swelling. There was general stiffness of the head and neck, and the horse could neither drink from the ground nor eat hay out of the rack; his food had therefore to be placed on a level with his head, to enable him to partake of it, while his general appearance was that of a horse suffering from tetanus. It was now thought that pus was being formed, and it was suggested by Mr. Jackson that the passing of the exploring needle might have set up this new inflammation. It occurred to me, however, that if this were so, it would to some extent have been confined to the part adjacent to the puncture, whereas the increased swelling was general. In the course of a week or ten days, however, this nearly altogether subsided, leaving the lower part of the original swelling the only prominent portion. This maintained the same character, and was hard and painful on pressure. It was at this point, it will be remembered, that the puncture was made. A few days later, the hitherto hardened tumour began to yield, and shortly afterwards suppurated. The discharge was that of healthy pus, but the amount was trifling.

So far I have preferred to leave the case to nature. Till now I have not seen in what the necessity for my interference has been indicated. This new inflammatory action, it is supposed, is an effort on her part to obliterate the rupture; and, lest this should terminate in a fistulous opening into the sac, it may now be advisable to apply to the surface of the tumour some stimulant to bring about absorption. With this view I shall employ the Ung. Hyd. Biniod., with what effect you shall learn in due course.

OSSIFICATION OF THE CARTILAGES OF THE LARYNX.—FALSE PRESENTATION OF TWIN CALVES.

By G. J. Austin, M.R.C.V.S., Newmarket, Auckland, New Zealand.

When practising in London I occasionally met with cases of ossific deposits in, or partial ossification of, the cartilages of the larynx. One instance I well remember, in which the animal could not breathe unless the tracheotomy tube were allowed to remain in. By accident the tube came out one night, and the animal was found dead in the morning. The post-mortem examination showed that a deposit of bony matter had taken place, leaving only sufficient room for the handle of a scalpel to be passed from the larynx into the trachea.

The other day I examined a mare, three years old, with a fistulous opening running under the parotid duct, and here it was evident that ossification to some extent had also taken place. She being very restive, I was obliged to cast her, and upon laying open the sinus so as to admit my fingers I found the thyroid cartilage to be ossified, and a large, rough, projecting tumour growing therefrom. This did not seem to interfere with her respiration when she was quiet or even walking, as the calibre of the larynx was not diminished. Having freely laid open the sinus and dressed it, I released the mare. I have no doubt the parts will soon heal, and as the animal is required only for slow, draught work, she will not be much affected by the ossification. This mare was attacked with strangles some months before, and being unbroken, with other young horses, was left to take her chance. I believe that most of these deposits and tumours, as related in the pages of your Journal for February and, I think, March, have their origin in strangles, or follow parotiditis and abscess accompanying severe cases of catarrh.

I may be permitted to mention a case of parturition, showing in what awkward positions one sometimes find calves are placed.

The cow was a wild brute, the property of Mr. Raighten, farmer. She had been in the field a day and a night, with the head and fore legs apparently of a calf protruding from the vagina. The calf was dead. After making the cow fast,

I found the head belonged to one calf, and the fore legs to another, and it was a work of some little time to put back both the calves, and get them out separately; the fore legs of the first calf, and the head of the second calf, being doubled back. I need hardly say that both were dead. The cow ultimately did well.

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from vol.* xxxiii, *p.* 662.)

In resuming the consideration of the leguminous plants, few will be found of greater interest, or more worthy the attention of the agriculturist, as yielding a large supply of green food for domestic animals, than the different varieties of *lucerne*.

They consist of shrubs and herbs, some being cultivated for the sake of ornament, and others to supply food for animals. They are closely allied to the clovers, belonging to the natural order *Leguminosa*, and to the genus *Medicago*. The following remarks upon the variety most generally cultivated for food will be sufficient to give an outline of the character of the whole.

"*Medicago sativa* (purple medick, or lucerne).—Stem usually erect, leaflets obovate, oblong toothed; peduncles many-flowered, racemed; pedicles usually shorter than the bracteas; legumes compressed, downy, twisted two or three times in a loose spire."—(Hooker and Arnott.)

This indigenous perennial plant is found growing wild in meadows and pastures in different parts of the country. It attains a height of from two to three feet, and flowers about the middle of June, having darkish-purple flowers. The cultivation of this plant has not received that consideration in this country which its value deserves. The chief cause of failure in producing a permanent crop, has been from not paying due attention to the nature of the soil upon which it has been planted, and want of proper management after.

It has a long, branching root, which penetrates deep; it therefore requires a soil having a "churlish surface, a rich, friable central stratum, and a very dry and deep sub-soil." When grown upon such soil, and properly managed, it fur-

nishes a most valuable supply of green food through many months of the year. It affords the first cutting about the end of April, and may be cut three or four times until the end of October, yielding each time a large bulk. Each crop lasts from six to ten years. It is of great service during dry seasons; its root, penetrating deep into the soil, receives a supply of moisture withdrawn from those plants whose roots are placed near the surface.

According to Sir Humphrey Davy, it contains "2·3 per cent. of nutritive matters, as follow:

1·8 Mucilage,
0·1 Sugar,
0·4 Insoluble principles."

This analysis places it inferior to the clovers; the white clover containing 3·2, and the red clover 3·9 per cent., of nutritive matters. Its correctness has been doubted by some good authorities; but, be this as it may, it is certainly superior to them in the quantity it yields, the supply it affords in the early period of the year, and by its not being influenced to the same extent as they are during a dry season.

Like all other green foods, it is chiefly valuable when given to horses intended for slow work; and also as food for cows, especially for milch cows, as it increases the quantity and enriches the quality of their milk. It is stated that "one horse constantly employed in road-work has been soiled upon rather less than a rood of lucerne, from the latter part of May till the latter part of November; and twenty-three farm horses have been kept in thoroughly good condition solely on eleven acres of lucerne during a period of twenty weeks." It was thought of some value as a medicine by the ancient writers; and Mr. Youatt, in speaking of this plant and clover says, "they speedily put forth both muscle and fat on the horse that is worn down by labour, and they are almost a specific for hide-bound."

"*Onobrychis sativa* (common saintfoin).—Leaves pinnate, nearly glabrous; legumes toothed on the lower margin, with elevated wrinkles on the sides; wings of the corolla as short as the calyx, the keel as long as the standard; stem elongated."—(Hooker and Arnott.) This plant much resembles the lucerne in many of its characters. It is an indigenous perennial plant, belonging to the "natural order" *Leguminosa*, and to the genus *Onobrychis*. It is found growing wild in many of the chalk districts, and was first cultivated in this country about the 17th century. Its stem grows about two feet high, and it flowers about the

middle of July, having very beautifully striped pink flowers. Like lucerne, its root penetrates deep into the earth, sometimes to the depth of fifteen or twenty feet, in search of nourishment. But, unlike lucerne, it prefers a dry chalky soil, and flourishes where the latter would perish. It attains its full growth in about three years, and, with proper management, lasts eight or nine years, yielding two crops of hay, or three or four of green fodder per year. It is chiefly cultivated for hay upon lands which yield but little grass, is very nutritious, and much liked by all kinds of cattle.

(*To be continued.*)

A COW POISONED WITH THE *ALTHÆA ROSEA.*

By D. B. Howell, M.R.C.V.S., Reading.

As I believe the case published in the *Veterinarian* for November, communicated by Mr. W. Watson, M.R.C.V.S., Rugby, is the only one on record of cows being poisoned by eating of the Althæa rosea, or hollyhock, I am induced to send the particulars of a similar case, but which, unfortunately, was attended with a different result.

On July 9th, 1859, I was summoned to attend a cow, the property of the Rev. W. Payne, of this town. On visiting her, some very remarkable symptoms were apparent. I may here state that she was a half-bred Alderney, seven years of age, and in the third month of utero-gestation. On the previous evening she was perfectly well. I inquired of the attendant what she had been eating. To which he replied, that during the previous night, by a gate being left open which communicated with the paddock, she had walked into the garden, and ate nearly a hundred heads off the hollyhocks, which were just then in their highest perfection, the majority of them bearing double blossoms. But he did not consider the illness of the animal was due to that; for when he thinned the plants in the spring, he threw them to the cow, who seemed to suffer no inconvenience from eating them.

On going into the garden I found she had passed by two small ornamental yew-trees, but although we carefully examined them, we could not detect that any portion had been bitten off.

Symptoms.—She was standing by a shed in the centre of the paddock, with her head thrust forward, eyes protruding,

pupils dilated, breathing laboured, ears and horns cold, muzzle dry, the legs thrust out, she staggered when compelled to move forward, and evinced no inclination to eat or drink, when food or water was presented to her. The pulse was very rapid, but too oppressed to count its beatings.

Treatment.—This at first was similar to that adopted by Mr. Watson; but not producing any action on the bowels, I gave, the following morning, a second purgative, and applied a liniment of mustard and ammonia over the whole length of the spine.

On the morning of the 11th I found her down, resting upon the sternum, foaming at the mouth, groaning frequently, and grinding her teeth, the jaws moving at a very rapid rate. An enema was thrown up, and repeated at night, and at intervals she was drenched with small quantities of gruel. She now became gradually weaker, and the bowels still continued dormant, until the evening of the 15th, when she died.

The following morning I made a *post-mortem examination*. The rumen was nearly full of ingesta in a liquid state, but I could not detect any portion of either the flowers, leaves, or stems of the hollyhocks in it. The third stomach was full to repletion with a dark-coloured, solid mass, not unlike oil-cake in appearance, nearly as hard, and breaking with a similar fracture. The lungs contained a large quantity of dark-coloured blood, especially the lobe on the right side, the side on which she lay the greater part of the time she was down. The brain and spinal cord I did not examine. The lacteal secretion was suspended from the first. Thinking it a very singular case, and being only sufficiently conversant with the botanical history of the plants as to know that they belonged to the mallow species, and were originally brought from China, I was induced to ascertain their action on two rabbits,—having no opportunity of experimenting on the bovine tribe. One rabbit I fed entirely on the plants, giving to it the flowers, stems, and leaves, and selecting those only from which the cow had eaten portions. I first gave it for three days in a fresh state, and afterwards in a withered condition. The second rabbit I fed in the same way, but with the addition of some meadow hay; but, instead of their being poisoned, they fattened; and if there was any difference between the two animals, the preference was in favour of the one entirely fed upon the hollyhocks; thus proving, that although they were prejudicial to the ruminant, they were beneficial to another class of the herbivora.

Facts and Observations.

NEW METHOD OF VENTILATION.

In arranging his plans for ventilation, McKinnell takes advantage of two simple and well-known facts. If an aperture is made, or a shaft carried through the ceiling of any room, or roof of any building, two currents of air are at once established; and these two currents, instead of jostling each other with human perversity, pass uniformly in definite courses according to fixed laws. The centre of the opening is occupied by an out-draught of the warm exhausted air of the building, while the sides are lined with an insetting current of the colder and purer atmosphere. One shifting column of air is contained within the other, and the two have a relative movement somewhat like that of the pieces of a telescope. Any one may illustrate this fact of the regular self-inclosed movements of fluids, of differing temperatures and densities, by warming a little water containing a few floating coloured particles, in a test tube, over a spirit-lamp. Directly the heat is applied, the coloured matter will indicate the presence of two opposite currents, in the positions and directions just mentioned. McKinnell carries two funnels or shafts, of different sizes and lengths, through the roof of the building he wishes to ventilate. The smaller and longer tube is placed in the centre of the larger one, and thus the two currents of air, naturally seeking to pass into and out of the apartment, are separated one from the other; and this concentric arrangement of the two tubes is so devised that the capacity of the central tube shall be equal to the annular space inclosed between its outer circumference and the inner aspect of the external concentric tube. The lower end of the inner tube is moveable, and has an expanding mouth-piece or flange. This trumpet-shaped expansion serves two purposes; if drawn down away from the outer tube, it spreads the incoming cold air over the upper part of the room, and so causes its descent to be more uniform and dispersed; it may also, by being raised to the level of the inner opening of the outer tube, be made to act as a valve shutting out altogether the external air, or limiting the currents to the area of the central tube.—*Medical Times and Gazette.*

HYPOCHLORITE OF ALUMINA.

ORIOLI recommends hypochlorite of alumina to be used as a bleaching and disinfecting agent, instead of the hypochlorites of lime and soda. It destroys more promptly, he says, organic colouring matter and gaseous matters of a mephitic nature.

ESTIMATION OF NITRIC ACID IN ROUGH SALTPETRE.

ACCORDING to Müller this estimation may be made by transforming the nitrate of potash into chloride of potassium by means of hot hydrochloric acid, the heat being continued until the vapour which is evolved no longer affects ozone paper. The chloride is weighed after calcination: it must be perfectly neutral.

SEPARATION OF UREA FROM URINE.

A SOLUTION of ammoniacal nitrate of copper, M. de Luna has noticed, completely decolorises urine, giving a precipitate which contains all the albuminoid and colouring matters of that fluid. The perfectly colourless filtered liquid serves excellently for the preparation of urea.

A FOURTH ALKALI-METAL.

MM. BUNSEN and KIRCHHOFF announce (*Annal. der Physik und Chemie*) that they have discovered a new alkali-metal, the fourth member of the group of potassium, sodium, and lithium. At present they have only found it in very small quantities in the mineral water of Kreuznach, in the saline water of Dureckeim, and in one of the sources of the Bade—the Umgemach.

The chloride of the new metal differs from those of sodium and lithium by the yellow precipitate which it produces in the presence of bichloride of platinum. It is distinguished from potassium by its nitrate being soluble in alcohol. Introduced into a flame, and examined with a prism, the

vapours of the new chloride show a very interesting spectrum, consisting of two blue lines, one of which, the fainter, almost corresponds with the blue of strontium; the other, also a well-defined blue line, is situated a little further towards the violet extremity of the spectrum, and rivals the lithium line in brightness and distinctness of outline.

The same authorities assert that lithium is one of the widest-spread elements. The water of the Atlantic was found to contain it. It was also found in the ashes of plants grown on a granite soil, in the vine, in tobacco, and also in milk and in human blood. In the mother liquors of tartaric acid manufactories, the lithia is found to be so concentrated as to be worth commercial extraction; and the same may be said of certain mother-liquors of saline springs.

ACCUMULATIONS IN THE STOMACH AND INTESTINES OF ANIMALS.

Masses of amalgamated silver, from one to two pounds in weight, are occasionally found in the stomachs of the mules that work in the silver mines of Mexico. Salt being used largely in the reduction of the metal, the animals eat the mud, and the quicksilver and the silver are thus taken in and accumulate in the alimentary canal. In this country it is by no means uncommon to find in the rumen of cattle, and the gizzards of fowls, masses of lead-ore, and these becoming acted on by the secretions are sometimes productive of serious consequences; paralysis, partial or complete, being a common result.

NUTRIMENT OF PLANTS.

Essentially to the true constitution of nutriment in vegetables is the presence of nitrogen; and Boussingault has ascertained that such as are rich in this element are also rich in phosphates. The same philosopher is convinced that when vegetables have produced seed, they contain less of these principles, and consequently are then deficient in nutriment as forage.

NATURE OF FERMENTS.

M. L. Pasteur asserts that the "ferment" is not a dead substance, without determinate specific properties. It is a being whose germ is derived from the air. It is not an albuminous substance altered by oxygen. The presence of albuminous matters, however, is an indispensable condition of all fermentation, because the ferment depends upon them for its life. They are indispensable in the light of an aliment to the ferment. The contact of the atmospheric air is, primarily, equally an indispensable condition of fermentation, but it is so in virtue of its being a vehicle of the germs of the ferments.

He asks—What is the true nature of these germs? Do they require oxygen in order to pass from the state of germs to that of adult ferments, such as are met with in the products undergoing fermentation? These are questions M. Pasteur confesses himself unable at present to answer.

SUBSTITUTE FOR HOG'S LARD.

The following compound has been proposed as a substitute for hog's lard.

Lard	$3\frac{1}{2}$ ounces.
Water	$3\frac{1}{2}$ „
Caustic Soda . . .	15 grains.

The soda is to be dissolved in about half an ounce of the water, and the lard gradually added alternately with the remaining water. It is soft at first, but soon acquires more firmness. It is not liable to be much affected by changes of temperature. The alkali is not detected by test-paper or taste, and suffices to form an adipose substance of a medium nature between fats and bodies soluble in water. Ointments made with it, containing metallic bases, oxides, chlorides, sulphides, iodides, &c., remain unaltered; and insoluble powders mix with it intimately, as do salts and extracts. It may also be easily washed off.

It has been proposed to call this compound *steadine*—a contraction of stearaïdine, resembling fat.

THE VETERINARIAN, JANUARY 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —CICERO.

THE ANNUAL ADDRESS OF THE EDITORS.

"Man flies from time, and time from man. Too soon
In sad divorce this double flight must end,
And then where are we?"

"Where is the fable of the former years?
Thrown down the gulf of time; as far from thee
As they had ne'er been thine."

THE return of certain periods brings with them the return of corresponding duties. Among these periods none, perhaps, are more momentous than the beginning of a new year, and few duties are more important than a review of the past. The moralist has told us—

"'Tis greatly wise to talk with our past hours."

Not to whine over their loss, so much as to cause us to make fair resolves for the future, and to bend every energy for the improvement of the present, as that alone is ours.

Entering upon the editorial labours of this, the seventh volume of the Journal, since the direction thereof has fallen into our hands, we may be permitted to offer a few explanations. We did not hurriedly take upon ourselves the task, neither did we seek it; yet we cannot say its duties were altogether novel to us. Still we have at times felt the difficulty of our position, and occasionally a fear lest we should fail to give satisfaction to our readers, and to realise, in its fullest extent, the conducting of a work calculated pre-eminently to advance the interests of the profession with which we have been for a very long time so intimately associated. We, however, felt convinced, from the manner in which the pro-

posal was placed before us, that although difficulties might, nay, would present themselves, it was our duty, nevertheless, to combat them, and to show that, with all our deficiencies and imperfections, we might overcome them, if so be we obtained encouragement to go onward in our course. And this, happily, has not been withheld from us.

All around and about us, at the present time, is portentous. Although much has been done, yet much remains to be done. We dare not be idle. Society heaves, as it were, with throes. It is therefore profitable to look back, and see what progress has been made. This will nerve us for continuance in well-doing, or will give a salutary check if any deviation from the right course has taken place, for we lay no claim to infallibility. All we ask is, that the same kind support be still accorded us as hitherto we have received. We are as earnest and as solicitous as ever we were, nor are we apprehensive of being forsaken by our friends, their cause and interests and ours being identical. We are desirous that our Journal should not only be the exponent of the wishes of the profession, but, like a mirror, it should reflect

> "The very age and body of the times,
> Its form and fashion."

So that those who come after us may both derive profit from our labours and see the advances that were being made in this our day.

Especially does the aspect of the times demonstrate the truth of the axiom, that "Union is strength." We see this proved in the associating together of individuals connected with a common calling for mutual support. Also in the many medical and scientific societies, the different Agricultural societies, the British Association for the advancement of General Science, as well as that of Social Science, with others too numerous to mention. All these are so many proofs of the advantages derivable from union. Let it be seen, then, that we too have imbibed the like spirit. We have now become a sufficiently numerous body; but we fear that there still exists too much estrangement—to designate

it by no harsher term—among us, and by it we are weakened. Alone, each may be able to do but little, but by combination great things can be achieved. Is the time not yet come that efforts are to be made for union? If not, when will it? Are we ever to continue indifferent, and even apathetic, as to our advancement and standing in society, while all around us is progressing? Again and again have suggestions been made for co-operation, but they have passed away unacted upon, and been forgotten, like an idle tale that has been told to uninterested listeners. When shall a different state of things obtain amongst us, and one conducive to our common benefit? The answer to this question rests with ourselves as a body. And here again we must be content to leave it. But who does not know how greatly our strength would be increased by a cordial union existing among us? Nor are we wanting now, as was once the case, of a common rallying point. We are an incorporated body; we have a Charter of rights, at least; and it is for those who can attach to their names the initials M.R.C.V.S. to associate themselves together in one unbroken phalanx, and, with a firm determination, maintain the position they have gained inviolate. Thus, although surrounded by those who affect to contemn our standard, we shall feel ourselves strong and capable of performing deeds, from which good resulting, the profession as a whole will be benefited, and charlatanism shrink back abashed, seeing that we are impenetrable.

Whilst thus commending union or combination, it should not, however, be forgotten that each might accomplish something. There is a wonderful power for social good in our individual acts. And if it be true, as philosophy teaches, that a stone thrown into mid-ocean affects the mass of waters even to the most distant shores, the actions of a single person have a far wider circle of influence than we are aware of. Nevertheless, although individual efforts may do some good, it must be conceded that, when something like organization obtains in a body, a still greater amount may be fairly anticipated to result. If "one touch of nature makes all men kin," surely a community of interests should

bind us together in one friendly alliance, dismissing all mistrust of each other, and causing us to work harmoniously as a whole.

It may be said, this is merely an iteration of what has been before again and again advanced; it is but "a thrice told tale." Let it be so. Shakespeare has told us, "there is always an element of good, even in things evil." These repeated statements have not been made in vain. All is not as the Valley of the Shadow of Death with us yet. There is no real cause for despondency, although there may be much to regret. We know of one bright spot, at any rate, on which the mental eye may rest with some degree of complacency —the pages of this Journal. No dark shadow has been cast over them, foreboding evil. In proof whereof we refer, with pride and satisfaction, to the increase of our contributors. With the past year we commenced the publication of a second series, and already the list contains between seventy and eighty names. We hail this as an omen for good. And may we not look upon the recent acts of the Council of the Royal College of Veterinary Surgeons as eminently conducive to the bringing about of a better feeling among the members, and ensuring their co-operation? We hope and believe them to be so. If the head be separated from the body politic, no true support can be given to it, and it must soon become a disintegrated mass, wanting both cohesion and strength.

"After the night comes the day,
After the darkness, dawn."

May our expectations be more than realised!

We need not repeat the trite remark that the present age is pre-eminently one of mind-progress. One class of persons devotes its energies to the investigation of the past, another section contents itself with the all-important present, while a third manifests a restless endeavour to pry into the future, and all are entitled to our respect. To work for the interests of science, and that for the public good, should be the object steadily kept in view by every professional man. Principle

must ever be the foundation of his judgment, and by skilful means in connection therewith he will carry them out, regardless of the pretensions which ignorance sets up, and the opposition with which he may be met.

If this applies to individuals, assuredly it does so equally to those on whom, it may be said, devolves the duty of accumulating together facts by which science is built up, and giving to them publicity. It is true they have to look to individuals to enable them to do this, and on turning over the pages of our Journal for the past year we do not think the subject-matter thereof is less varied or less interesting than that of antecedent years. We owe this to our contributors, with whom, in a very great measure, rests the character of this periodical. We began the year in arrears, and it was only at its close that we were enabled to bring them up, although we have not hesitated freely to make use of small type, and to give an occasional extra sheet. This is very gratifying to us, our regnant desire and aim always having been the weal of the profession, while at the same time we would not have "*mens conscia recti*" to be a mere idle phrase with us, but a verity, an assurance ever present.

Having said this much, we may be now permitted to allude more particularly to some of the contents of the last year's volume, Whilst those at home have not failed in their support, it has been enriched by communications from India, Australia, New Zealand, and America. Mr. Ernes and Mr. Watson have regularly furnished us with matter in their respective sections, and, in addition, Professor Brown has commenced a series of papers on an all-important division—"Veterinary Therapeutics;" all of which must tend, not only to maintain the standing of the Journal, but to enhance its worth. To Assistant-Professor Varnell we have been indebted for an elaborate paper on a peculiar and very uncommon disease of the osseous tissue of horses, as well as for many "remarks," on cases forwarded to him, explanatory of the morbid and other changes that had taken place.

In reference to the first subject, we incline to the opinion that, although there is much that is ambiguous in the cases, and the nature of the disease complex, it is to the food or the water, or both, that we must look for the cause of the disease; viewing it as a sanitary question. Rightly did Mr. Varnell more than hint that the peculiarity of the affection constituted sufficient grounds for the instituting of pertinent and searching inquiries into its cause and nature. Of what use are investigations into those things with which all are familiar? Science has its mysteries, it is true, but these are not always unfathomable, and we are more than justified in seeking their solution, since by so doing we are often enabled to throw light on much that otherwise would have lain hidden, and thus extend its boundaries. Herein, too, is seen the advantage to be derived from scientific knowledge, as the untaught would have been contented to let events like these pass by unnoticed.

The next subject to which we would advert are the several instances of poisoning by vegetables, communicated by Messrs. Fuller, Litt, Musgrave, Wallis, and others. Surely these are full of interest, although we have yet much to learn under this head. We think, however, alluding to what has been already stated, that we are in a fair way to clear up much that is at present unsatisfactory here. The occasional introduction of the effects produced by certain plants on animals, by Mr. Watson, assuredly shows the practical benefits that must arise from veterinary surgeons becoming acquainted with botany.

The question of veterinary obstetrics was, we think, pretty well ventilated, it having called forth papers from several pens, some of them being now and then dipped a little too deep in the gall of personality. We regret that these manifestations should take place, holding them to be opposed to those kindly feelings which ought to prevail in a community, while they are sure to engender a spirit subversive of all union. It is true there are times and seasons that call for truth being spoken freely and boldly, but it may be done without acerbity, and uncourteous language should never be

indulged in. It were utopian to expect that a oneness of opinion should exist at all times, nor perhaps would it be desirable; yet, on the other hand, it surely does not follow, because there are differences, that invective and detraction should be indulged in. There is a want of charity in this, and the golden rule is sadly forgotten.

Gladly have we given insertion to observations condemnatory of vivisections, and we rejoice that the *Royal Society for the Prevention of Cruelty to Animals* took the subject up, and by appointing a deputation to visit the veterinary schools at Paris, manifested how strong their feelings were on this subject. Our own feeble voice has been honestly raised against it more than once, and sincerely do we hope that it may quickly be put a stop to. We believe man has no right to torture God's creatures, in the first place; and in the second, we are convinced that no corresponding benefit has resulted from the infliction of such barbarities, and most certainly their repetition is altogether uncalled for.

We have continued to extract from our contemporaries—received in exchange or otherwise—the different modes of treatment of disease in the human subject possessing any novelty, from a conviction that they often prove suggestive, and may be frequently applied to the lower animals; those coming under the care of the veterinary surgeon. We have also endeavoured to place before our readers whatever we considered of worth to them in connection with the allied sciences. And surely all these are means conducive to the end we have in view—the continued onward progress of our common profession. They are the wheels within wheels of the great machine that is working out our advancement. As journalists, we would not merely echo the wants and wishes of the body, but be in some measure its pioneers and guides. We anticipate yet greater things, and hope to live to witness their realisation. We are desirous of leaving behind us, on the sands of time, some proofs of our labour, and have been solicitous to perform our duty in no cold, perfunctionary manner, but as actuated by a zeal according to knowledge, and with becoming ardour.

Those who write for a section of the community, whose sole aim is to promote its interests, and are not carried about with every wind and wave of doctrine, must expect to give offence to some. In the direction of a public journal there is much to awaken both consideration and anxiety; and if, at the close of a given period, the retrospect is favorable, we have reason to be thankful, for we are not vain enough—as already confessed—to believe that it is our unassisted efforts which have produced the satisfactory result. We have already stated our firm conviction to be that to realise all that will prove conducive to our continued onward progress, it is only necessary for co-operation, cordial and sincere, to obtain among us, and we think we can perceive the germs of this rising up. May no blighting influence check their full development. We have again and again said the Journal is the profession's, or what it is pleased to make it. The more valuable the matter communicated to it is, the greater, consequently, will be its worth; and if members cease to contribute to it, its pages will become little more than a blank, so far as the profession is concerned.

For some little time we have given ourselves up to the study of the "black arts" of reading and writing, both for our own profit and, we trust, that of our readers. Nor do we believe they have made us in the least demoniacal, but, on the contrary, they have convinced us how little as yet we really know. We therefore intend to continue our studies, not forgetting what Horace has said—

"Prudens futuri temporis exitum
Caliginosâ nocte premit Deus."

The dread monarch Death has moved on in his ceaseless march during the year, and if he has not taken from our numbers so many as in antecedent years, he has withdrawn those who connected the past with the present generation, and with whom we had been long associated, as well as others much younger; thus bidding those that remain prepare for his coming, with some of whom the sands of time are fast running down, and few, perhaps, can say they glisten like diamond-dust as they fall.

Thus the two great mysteries, life and death, divide the world between them. They go hand in hand together; for death preys on life, and life springs out of death, so intimately are they connected.

Fortunately, we have not been called upon to record the death of any of our professional brethren by that scourge of nations, war. India is now tranquil, and we sincerely hope that a wise and liberal government, enlightened by what has taken place, will prevent a recurrence of scenes at which the memory shudders; arising from the worst passions of man having been aroused and for a time allowed to act unrestrained.

And now having reviewed the past, let us hail the coming year. At its end may we be both wiser and better than we are at its beginning.

> "Hand in hand, let us stand, one and all
> To pledge the coming monarch, who will grant a crown to those
> Whom he proves to be monarchs o'er themselves."

Extracts from British and Foreign Journals.

FACTS AND FALLACIES CONNECTED WITH THE RESEARCH FOR ARSENIC AND ANTIMONY; WITH SUGGESTIONS FOR A METHOD OF SEPARATING THESE POISONS FROM ORGANIC MATTER.

By Alfred S. Taylor, M.D., F.R.S.

[Dr. Taylor having sent to us copies of some of his papers on poisons, we shall publish them *in extenso*, or nearly so, being convinced that they cannot fail to interest our readers, while their importance none will attempt to gainsay. Especially would we direct attention to his very delicate and certain mode of detecting arsenic, under the heading, "Distillation Process for Arsenic," which we have seen the application of, and which obviates the objections that have been raised to several other methods.]

The processes which have been hitherto successfully employed by toxicologists for the detection of arsenic in the tissues are those of Marsh and Reinsch. Although the principles on which they are based are doubtless well known to

the readers of these 'Reports,' it is necessary to make a few observations upon them before proceeding to describe that method which, while it appears to me to combine the advantages of the two, is attended with less risk of fallacy than either process taken separately.

Marsh's Process.

Marsh's process consists in the conversion of the ordinary compounds of arsenic to arseniuretted hydrogen gas, in a properly constructed apparatus. In an early volume of Guy's Hospital Reports (vol. ii, p. 76, 1837), I published an account of Mr. Marsh's discovery, with a drawing of the apparatus used and recommended by him. Mr. Marsh confined his results to the combustion of the gas, the appearance of the metallic deposits, and the production of arsenious acid as one of the results of combustion. Since that date numerous forms of apparatus have been suggested; and the means of distinguishing arsenical from other deposits resembling them have been described in most works on chemistry and toxicology.

It is conceded by all those who have experimented on the subject that, in the absence of disturbing causes, this is a most delicate process for the detection of arsenic. Mr. Marsh himself does not claim for it a higher degree of sensitiveness than that of enabling him to detect the 1-120th part of a grain of arsenic (the quantity contained in one minim of Fowler's solution); while, with regard to the effect of dilution, he found that one grain of arsenic in twenty-eight thousand grains (or four imperial pints) of water, furnished, when placed in a larger apparatus constructed for the purpose, upwards of one hundred distinct metallic arsenical crusts.* MM. Danger and Flandin assert that metallic deposits may be procured when the arsenic forms only 1-200,000th part of the liquid examined ('De l'Arsenic,' p. 83); while M. Signoret states that he has procured metallic deposits with only the 1-200,000,000th part of arsenic in the liquid. This is equivalent to one grain of arsenic dissolved in three thousand gallons of water. We must regard these results either as greatly exaggerated, or depending upon some peculiar mode of computation. In general, either the degree of dilution with water or the supposed weight of the deposit derived from combustion, has been taken as the standard of delicacy; but the real question in practice is, what weight of

* On the Separation of Arsenic, 'Transactions of the Society of Arts,' vol. li, p. 10.

arsenic can be detected in the minimum quantity of liquid required for the use in Marsh's tube. From experiment I find, that deposits may be obtained from the 2000th part of a grain, and that they assume a reliable character, and admit of the application of corroborative tests, when the weight of arsenic reaches the 1-100th of a grain. By a mode of operating different from that advised by Mr. Marsh, it is possible to extract and procure, in a visible metallic deposit, the whole of the metallic arsenic contained in the 2000th and even in the 4000th part of a grain of arsenious acid; but to these small quantities it is difficult, if not impossible, to apply the requisite number of corroborative tests.

Mr. Marsh intended that his method of detecting arsenic should be substituted for the ordinary process of reduction and the use of the liquid and gaseous tests; but its claims to consideration rested upon an entirely different ground, namely, the power which it conferred on chemists, for the first time, of detecting the poison in the soft organs and fluids of the body. Up to the date of this discovery there were no chemical proofs that arsenic was absorbed or deposited in the tissues of the living body. In reference to the application of the process to organic substances, Mr. Marsh advised that, if the suspected substance was a solid, it should be boiled with two or three ounces of water, and the liquid filtered and introduced into the tube. If it was liquid, such as thick soup, the contents of the stomach, gruel, tea, cocoa, &c., he simply recommended that it should be thrown on a filter to separate the more solid parts, and that the liquid portion should be placed in the tube or inverted bottle in which the hydrogen was generated. Thus, then, he brought every substance to the liquid state, while he made no attempt to separate the organic matter; or, when the poison was in small quantity, to reduce the bulk of the liquid by previous concentration. On the contrary, his plan simply consisted in enlarging his apparatus for large quantities of liquids. In one experiment, he operated on half a gallon of water containing one grain of arsenic; and in another he states that he obtained equally satisfactory results from operating at once on *three pints* of very thick soup, the same quantity of port wine, porter, gruel, tea, &c. In these analyses of large quantities of liquids, the process of evolving the gas was allowed to proceed very slowly, and several days elapsed before the mixture ceased to give indications of the presence of arsenic. In order to prevent the effect of the frothing arising from the generation of hydrogen in an organic liquid, Mr. Marsh recommended the greasing or oiling of the shorter

limb of the apparatus, before introducing the substance to be examined. Having been a member of the committee that awarded to the late Mr. Marsh, in the year 1836, the large Gold Medal of the Society of Arts, for his ingenious discovery, and having seen him operate, I can confirm the correctness of the above extracts from his paper. Although, as he left it, his invention was a useful addition to the ordinary processes for detecting arsenic in clear liquids, it was quite unfitted for the detection of the poison when associated with much organic matter.

The first improvement on Marsh's method of analysis was made by Orfila, in 1839. This toxicologist deflagrated the organic matter in a dry state with nitrate of potash, according to a plan suggested by Rapp. He subsequently employed nitric acid, to destroy the organic matter; he then brought the mass, by evaporation, to a dry, carbonaceous state, and acted on the residue by nitro-hydrochloric acid. The arsenic was dissolved in water as arsenic acid, and in this state it was placed in the hydrogen apparatus. By means of these processes, Orfila was enabled to concentrate the arsenic, and to remove it from the organic matter; and thus, by the aid of Marsh's tube, he succeeded in detecting the poison in nearly all the organs and fluids of the body. MM. Danger and Flandin advised the carbonization of the organic matter by concentrated sulphuric acid and heat. Fresenius and Babo destroyed the organic matter by boiling the substance in a mixture of hydrochloric acid and chlorate of potash; and others, with a similar object, have employed chlorine and potash. In all these cases, the arsenic is more or less completely converted to arsenic acid, and in this state the presence of the poison is easily demonstrated. Analysts who have had occasion to employ these various methods of destroying organic matter must have observed that, in some instances, they are liable to occasion a loss of arsenic; in others, they overload the liquid with chemical compounds, or in default of entire carbonization, they yield a dark, syrupy residue, which is liable to produce so much froth in the tube, as to render it difficult to procure arseniuretted hydrogen gas in a state fitted for testing. The use of nitric acid in large proportion, as advised by Orfila, is objectionable; for unless great care is subsequently taken to expel the whole of this acid, the arsenic is not in a proper state for separation, either by the process of Marsh or by that of Reinsch.

Apart from the great trouble and difficulty of procuring the organic liquid in a state fitted for evolving arseniuretted hydrogen, there are other obstacles to the reproduction of

the gaseous compound in the presence of certain metallic and non-metallic substances. The presence of copper or mercury in a liquid, or of chlorate of potash, either interferes with the free production of arseniuretted hydrogen, or leads to its decomposition when produced. In addition to the fallacies pointed out by others, I may mention that, in the course of the analyses made in Smethurst's case, I found that 1-96th of a grain of arseniate of potash, mixed with a small quantity of solution of chlorate in the tube, did not give the slightest indication of the presence of arsenic. It was only when the proportion added was about 1-16th of a grain, that deposits were readily procured by the combustion of the gas. An exclusive reliance upon Marsh's process, when applied in the manner recommended by the discoverer, might, therefore, lead an analyst to the erroneous opinion that arsenic was absent, when the presence of the poison might be safely demonstrated by other methods of research.

Deposits or stains resembling those of arsenic, and liable to be mistaken for them, may also be met with under circumstances of which the conditions are but little understood. It was by some accidental result of this kind that Orfila was led to affirm that arsenic was a constituent of all flesh, and of animal matter generally. This statement was, however, subsequently proved to be unfounded, before a committee of the Institute. The cause of the fallacy which had misled so great an authority was not, however, satisfactorily explained. Antimony, phosphorus, selenium, sulphur, &c., and even iron and zinc, may, it is well known, so combine occasionally with hydrogen, as to deceive analysts who rely upon the appearance of the deposits.

The process of Marsh may be employed either with or without the combustion of the arseniuretted hydrogen gas, and the examination of the products of its decomposition. Assuming that the gas is burnt in the manner recommended by the discoverer,—namely, as it issues from a small jet,—I believe that the best method at present known for determining the arsenical nature of the deposits is the following:—The deposits should be collected in small porcelain capsules. 1. Add strong *Nitric acid*, which dissolves the deposit, and evaporate the acid liquid on a sand-bath to dryness. A white deliquescent residue remains, which gives a reddish-coloured precipitate, with a solution of nitrate, or of ammonio-nitrate of silver (arseniate of silver). 2. A strong and fresh solution of *Chloride of lime* immediately dissolves the arsenical deposit, and on evaporating the liquid to dryness, white arseniate of lime remains, which gives the red precipitate above men-

tioned, when nitrate of silver is added to it. 3. *Sulphide of ammonium* does not readily dissolve the deposit, but when mixed with it, enough is dissolved to leave, on evaporation, yellow sulphide of arsenic (orpiment), soluble in ammonia, but insoluble in cold hydrochloric acid. The pale, steel-blue colour of the flame, with the production of a white smoke (arsenious acid), and the metallic deposits or mirrors, received on glass or porcelain, are well-known characters of arseniuretted hydrogen gas in a state of combustion.

It has been suggested that the copper or silver tests might be applied to the products by moistening surfaces of glass with the respective solutions, and holding them at a short distance above the flame, so that the arsenious acid evolved during combustion might be received upon them.

It is well known that *Antimony* combines with hydrogen, and that this gas, when burnt, produces deposits resembling those of arsenic. These may be collected in porcelain capsules, and tested by the method above described. 1. Strong *Nitric acid* dissolves the deposit. On evaporation to dryness, a white, insoluble compound is left (an insoluble oxide of antimony). Nitrate of silver added to this white residue produces no change, unless there was arsenic combined with the antimony, in which case a spot of red arseniate of silver will appear. If to the colourless mixture of oxide of antimony and nitrate of silver, a small quantity of ammonia be added, or the stopper of a bottle containing ammonia be brought near, the residue in the capsule is immediately blackened, owing to the production of an insoluble compound of antimony and silver. 2. A strong solution of *Chloride of lime* does not readily dissolve the antimonial deposit. Even when heated on a sand-bath, there is no change, and the dry residue gives no red precipitate when treated with nitrate of silver. 3. *Sulphide of ammonium* readily dissolves the antimonial deposit; and on evaporation, red sulphide of antimony remains in the capsule, insoluble in ammonia, but easily dissolved by cold hydrochloric acid. Antimonial deposits are thus easily known from those of arsenic.

The flame of antimoniuretted hydrogen is of a pale, yellowish-white colour. It furnishes black or smoky-looking deposits on glass or porcelain, which are remarkably different from the metallic-looking and brown-coloured deposits of arsenic. The white oxide of antimony, evolved by combustion, does not produce in the liquid tests for arsenic, held above the flame and within the vapour, any coloured precipitates. The ammonio-nitrate of silver is simply blackened as a result of the reduction of the metal.

Arsenic and antimony are thus very easily identified when Marsh's original process of burning the gas is resorted to. Many other distinctions have been suggested; but it is not necessary to specify these, as the above characters serve to distinguish the two metals clearly from each other, and both of them from all other metals known to chemists. The original process of Marsh is by no means so well adapted for the detection of antimony as of arsenic. The antimony when introduced into the tube in a state of acid solution, if in small quantities, is liable to be rapidly precipitated on the zinc in the form of a black powder, and the current of gas soon ceases. When the 1-100th of a grain of tartar emetic was dissolved and placed in the tube with pure water and hydrochloric acid, there was not the slightest indication of the presence of antimony. It was only when the quantity amounted to about a grain, that a number of well-marked deposits, in a state fitted for testing, could be procured by the combustion of the gas. In employing this process, we may meet with deposits so small and ambiguous from their thinness, that the corroborative tests may fail to show their nature. In this case, it will be advisable not to rely upon the combustion of the gas, but upon its decomposition by heat, and the reagents to be hereafter described.

As a result of this examination of the process of Marsh, it may be stated that there are two difficulties which the analyst encounters in resorting to it for the separation of arsenic from the solids or fluids of the body. First, there is no good or simple method of bringing the arsenic to a concentrated state, *i.e.*, to a state fitted for testing, without producing froth; and secondly, when the quantity of arsenic in an organic liquid is so small as to render the adoption of the process necessary, it is not possible to follow the plan of the inventor, of generating the hydrogen in the whole quantity of the organic liquid.

The chemical facts upon which this process is based had been long known to scientific men, but it is not the less creditable to Mr. Marsh that he should have been the first to make a practical application of them for the detection of arsenic. Arseniuretted hydrogen was discovered by the Swedish chemist, Scheele, about the year 1775. He proved that it was a combustible gas, and that one of the results of its combustion was a regulus of (metallic) arsenic. Proust, in 1806, Trommsdorf, in 1803, and Stromeyer, in 1806, successively examined the gas, and described methods for its production. Stromeyer found that it burnt with a blueish white flame, and that the products of its combustion were a

mixture of arsenious acid and metallic arsenic (brown oxide of arsenic). Further, that it was decomposed by nitric and nitrous acids, by aqua regia, by chlorine, and a great number of metallic solutions, the products being water, arsenious and arsenic acids. In 1815, the gas was examined by Gehlen, and he discovered a new method of preparing it, by applying heat to a mixture of arsenic and caustic alkali. Its highly poisonous nature was demonstrated by the death of Gehlen from the respiration of a small quantity of the gas, during the performance of his experiments. An incautious manipulation with this gas has since led to fatal consequences in at least three cases. Every cubic inch contains one fourth of a cubic inch of arsenic in vapour, and an atmosphere containing one tenth by volume of the gas is fatal to animal life (Berzelius). The gas contains by weight more than 96 per cent. of arsenic. It is very heavy, its specific gravity being 2·69. In 1830 Soubéiran published his researches on this compound. This chemist confirmed the results of Gehlen on the production of the gas by heating a concentrated alkaline solution with arsenic; and he also made the two important discoveries: 1st, that when a current of the gas was moderately heated in a tube by a spirit-lamp, it was decomposed; and that arsenic of a bright metallic lustre was deposited on the interior of the tube; and 2dly, that a solution of a salt of silver was decomposed by it, and that water and arsenious acid were the products of the decomposition.*

To Mr. Marsh alone is the credit due of applying some of these facts to a useful and practical purpose in toxicology; and the large number of processes which have been put forward since his time by various chemists as new inventions are nothing more than the adaptation of some of the above properties of the gas to Marsh's original process. The production of arseniuretted hydrogen from the action of an alkali on arsenic has been, in recent times, assigned to Fleitmann,—the decomposition of the gas by a solution of the nitrate of silver has been claimed by Lassaigne,—the method of decomposing it by heat has been described as the process of Berzelius, Liebig, or Chevallier, while the fixation and decomposition of it by nitric acid has been claimed by M. Meillet. It is, however, evident, from the remarks already made, that the whole of these properties of the gas were well known at the time of Marsh's discovery; and if the author himself did not make use of them, it was probably because he thought

* Payen, 'Traité des Réactifs,' 1841, Supplement, p. 5; Berzelius 'Traité de Chimie,' 1829, tom. ii, p. 433; and 'Manuel Pratique de l'Appariel de Marsh,' par Chevallier et Barse, 1843, p. 60.

that those which he had selected would suffice in all cases for demonstrating the presence of the poison.

The frequent occurrence of arsenic as an impurity in sulphuric acid and zinc created for some years a degree of distrust in the results obtained by the application of Marsh's process. Some toxicologists employed hydrochloric acid in place of the sulphuric, but this is liable to contamination with arsenic as a result of the distillation of salt with arsenical sulphuric acid. A large quantity of impure sulphuric acid is annually manufactured in this country, chiefly for agricultural purposes. From the researches of Dr. Davy it would appear that arsenic is thus conveyed into manures; and crops grown from the manured soil are found to be more or less impregnated with the poison.* He found the proportion of arsenious acid contained in the commercial sulphuric acid to be one grain to an ounce. Dr. Rees found the proportion to be 13·5 grains in twelve fluid ounces, and Mr. Watson found 21·3 grains in the same quantity of acid. Zinc not unfrequently contains both arsenic and antimony, and Dr. Clark, of Aberdeen, informed me some years since that he had scarcely found a sample of zinc free from traces of arsenic. Within a recent period more care has been given to the purification of these substances, so that the acid and metal may now be obtained without difficulty in a state fitted for use in Marsh's process. It need hardly be observed, however, that they should not be employed in any investigation until they have been submitted to a preliminary testing in quantities equal to those which are to be employed in the process.

(*To be continued.*)

ACCLIMATISATION OF ANIMALS.

At the weekly meeting of the Society of Arts held on the 29th ult., a paper on the "Acclimatisation of Animals" was presented by Mr. F. T. Buckland, M.A., assistant-surgeon 2d Life Guards. He called attention to the importance of the art and science of acclimatisation, which might be said to comprehend the art of discovering animals, beasts, birds, fishes, insects, plants, and other natural products, and utilising them in places where they were unknown before. He referred to the establishment of La Societé Impériale d'Acclimatation in Paris, and to its labours to effect the objects which he sought to

* 'Philosophical Magazine,' August, 1859, p. 108.

accomplish. He might be asked what was the use of acclimatising animals in this country; had they not already the best animals that could be procured? The answer was they might think they had the best, but good was the best till something superior was produced. Mr. Mitchell startled them with the astonishing fact that, since the Christian era, the only additions to their catalogue of domesticated animals had been four in number; viz., in 1524, the turkey; in 1650, the musk duck; in 1725, the gold pheasant; in 1740, the silver pheasant. There was an answer to the question of the Sceptic, who believed they had the best of everything; and if he were a gastronome, he appealed to that love of good feeding, which they all had more or less—(laughter)—and asked him if it were not for the acts of acclimatisation which took place in 1524 and 1725, what would we have for dinner on Christmas-day to face the roast beef—(laughter)—and where would be the pheasants which he took so much pride in preserving in his coverts? The learned professor of the Acclimatisation Society in Paris told them that the world furnished no less than 140,000 animals, and out of this catalogue he (Mr. Buckland) would merely direct their attention to forty-three. He would begin with the eland, which was exceedingly good to eat, and which had been already introduced into this country. In the catalogue of the animals at Knowsley, when the late Earl of Derby died, in 1851, there figured five elands —two males and three females, one of which had been born there. Herds of the noble antelope had been founded at Hawkstone by Viscount Hill; at Taymouth, by the Marquis of Breadalbane; and at Tatton, by Lord Egerton; and he had recently a communication from Lord Hill, who stated that he had been most successful in rearing and breeding this animal. He hoped that they would soon have the eland at their cattle shows and in their butchers' shops. It had a sort of "gamey" taste—(laughter)—which rendered it better for eating than a fat cow. He was convinced that the mouths of those who had once tasted it would water for it. (Laughter.) He might also mention the leucory and the gnu. Antelopes were difficult things to rear, but it was recorded that the harnessed antelope breeds freely in confinement, as will most probably the boshbock. The springbock would live in their parks, and the koodoo might be also acclimatised. They had in England only three species of deer, but out of forty-three kinds of deer there was hardly one which would not adapt itself to their seasons. They might be obtained from Barbary, America, Persia, and other places. There was also a vacancy in the English parks for the kangaroo. Mr.

Gould spoke of the excellence of the kangaroo venison, and the introduction of the animal will be something more than a mere zoological luxury. There would be no difficulty, apparently, in acclimatising the alpaca in Australia, though where they had been introduced in this country the rot had seized them in consequence of the tenderness of their feet. It was part of his plan to point out what new and interesting birds would breed and were capable of acclimatisation in this country. As regards the pheasants, he might mention that the cheer presented to her Majesty lived for several years in the Royal Gardens at Buckingham Palace, and the monal was perfectly capable of bearing the severest winter. The list of birds that might also be introduced included the curasows, the oscellated turkey, the Cuban colin, the welcome colin, the Californian colin, the crested guinea-fowl, the brush turkey or tallegalla, the gelinotte or hazel hen of the Germans, the red-backed parakeet and crested grass parakeet, the Wonga pigeon, the crowned pigeon, the pied goose, the white-faced shieldrake, the red-billed duck, the dusky duck, the sommer duck, the ashy-headed goose, the Sandwich Island goose, the cereopsis goose, the bean goose, the Rock of Magellanic goose, the snow goose, the black swan, the black-necked swan, the Stanley crane, the white stork, the Mantchourian crane, the Australian crane, the laughing kingfisher. He remarked that the beaver and buzzard were formerly to be found in this country, and might be restored. He next drew attention to fish culture, and to specimen of insects and plants that might be acclimatised. In conclusion he announced the formation of a society for the acclimatisation of animals, to which Miss Burdett Coutts has subscribed £500, and has promised an annual subscription of £10.

The heads of many of the animals referred to by Mr. Buckland were suspended on the walls of the apartments, and stuffed specimens of the birds were ranged on the tables.

THE CHEMISTRY OF PEPSIN.

By Harry Napier Draper, F.C.S.L.

A discussion bearing upon the merits and demerits of pepsin has suggested the idea that a brief *résumé* of the present state of our knowledge of its chemistry may not be unacceptable to the readers of this journal. By treating of

this succinctly under a few heads, I hope to present the most important bearings of the subject, and, by avoiding extraneous matter, to claim from chemists and medical men a more careful consideration of the mode of action of a probably very valuable remedy.

Composition of the Gastric Juice.—The best analyses of the fluid which is secreted by the gastric follicles show that it does not contain more than 1·72 per cent. of solid matter, and that while some small portion of this consists of alkaline and earthy chlorides and phosphates, by far the greater part is a peculiar organic body to which the name of *pepsin* has been given. Besides these the gastric juice contains a free acid. It would seem at first sight no very difficult matter to decide what this acid really is; but although the question has engaged the attention of many chemists, it can scarcely be looked upon as satisfactorily decided. Opinions have fluctuated between the hydrochloric and lactic, and the nature of the difficulty of forming exact conclusions may be thus shortly stated. The secretion contains, as already mentioned, alkaline chlorides; and supposing lactic acid to be also present, the fluid would, if distilled, give hydrochloric acid, for the reason that slight elevations of temperature cause the decomposition of the chlorides by lactic acid. There are, however, two facts which lead very much to belief in the lactic-acid theory. The first of these is, that Professor Graham has long since demonstrated by a process not involving the necessity for distillation, that this acid is present in the normal condition of the fluid. The other is, that by a change occurring within the stomach itself, lactic acid is known to be produced. This circumstance I shall again have occasion to advert to.

Action of the Gastric Juice.—It was at one time supposed that the gastric secretion possessed the power of acting upon all the constituents of the food; that is to say, of acting equally on the nitrogenous, the starchy, and the oleaginous portions. This idea, however, has, since the researches of Frerichs and others with reference to the saliva, been abandoned, and it is now a generally accepted truth that the proper secretion of the digestive cavity dissolves only the azotised matters which are brought into contact with it. The amylaceous constituents of the food are by means of the saliva, with which the process of mastication impregnates them, converted into *glucose*—a substance which, as far as we are aware, requires no further preparation to be assimilated. The fatty matters are at the same time merely finely divided, and form a kind of emulsion with the chyme, undergoing

digestion only after admixture with the biliary and pancreatic secretions. For the proper solution of the food in the gastric juice, heat and motion are two essential conditions. If the temperature of the stomach be lowered, digestion is much impaired; but then, on the other hand, if it be elevated above 120° the function is altogether checked. The action of gastric juice upon nitrogenized matter has often been carefully observed, not only in cases where the secretion has been obtained by fistulous openings into the stomachs of dogs, but, as in the well-known case of St. Martin, in the human subject. If a piece of coagulated albumen, for example, be suspended in a phial containing gastric juice, and the phial be placed in water which is kept at a temperature of 100° Fahr., after a short time the surface of the albumen becomes decomposed, and its edges become rounded. By slightly shaking the phial the pulpy matter which invests the mass is removed and dissolves in the fluid, exposing a fresh surface to its action, and if this be continued for a few hours the whole will be dissolved. Such a solution of albumen is very different in its constitution and properties to the solution obtained by dissolving albumen in a dilute acid; for while the gastric solution readily passes into the circulation, it has been demonstrated by Bernard that the latter is carried off with the urine. Attempts have been made to estimate the probable amount of the gastric fluid which is secreted in the twenty-four hours, from the assumption that a fixed quantity of the secretion is capable of digesting a certain weight of anhydrous fibrine or albumen. Not only must, in my opinion, such a mode of calculation be deemed fallacious, seeing that there is no evidence that the secretion of the dog, which has always been the subject of the experiments, resembles that of man with sufficient accuracy to admit of the deduction from one of facts which should apply to the other, but I find that the statements of different chemists as regards the solvent power itself differ so widely that we must cease to regard their results as even approximations to general truth. Thus, for instance, according to Lehmann, about twenty parts of the gastric juice of the dog are required for the digestion of one part of albumen. From these data the amount daily secreted by a healthy man must be from sixty to eighty ounces.* But if we are to believe Boudault, who is one of those who have

* It has been stated by Schröder to amount to a little more than 30 pints.—Ed. Chem. News.

most recently experimented in this direction, 100 grammes of canine gastric juice will dissolve and digest forty grammes of dried fibrin—a widely different and, I think, quite irreconcilable result.

Nature of Pepsin.—Pepsin, the organic constituent of the gastric juice, was first isolated and examined by Wasmann. He found that if the mucous membrane of a stomach were treated with cold water and the infusion evaporated to dryness, there remained a viscid, brownish mass, having the odour of glue. The properties of a solution of this substance may be thus shortly stated.

It is precipitated by the addition of alcohol, tannin, or acetate of lead, forming in the latter case a compound of tolerably definite constitution—peptate of lead. It possesses the power of digesting nitrogenized substances if they are subjected to its action under fit conditions of heat and motion.

If the peptate of lead be decomposed by sulphide of hydrogen, a solution of pure pepsin is obtained.

This solution, which is neutral, is of itself incapable of effecting digestion; but if a small quantity of an acid, as lactic or hydrochloric, be added, solution proceeds rapidly. The pepsin seems, therefore, to *dispose* the acid to dissolve the substance, somewhat simulating, in fact, the action of a ferment. Indeed, the ferment theory would seem to be borne out by the action of pepsin upon grape sugar, which it converts into lactic acid. Here I must not omit to allude, in passing, to the manner in which the starchy portions of the food are digested. The action of the ptyalin in the saliva first converts the starch into grape sugar, which is capable of being assimilated without digestion, and by the further action of pepsin upon the grape sugar a sufficiency of lactic acid is produced to carry on the digestion of nitrogenized food. The changes which take place may be thus represented:

One equivalent of starch $= C_{12}H_{11}O_{11}$ becomes
One equivalent of glucose $= C_{12}H_{12}O_{11}$ which is finally changed into
Two equivalents of lactic acid $= 2(C_6H_6O_6)$.

Artificial Pepsin.—The difficulty of conveniently obtaining the gastric juice of animals for medicinal purposes, and the disgust which many patients not unnaturally felt at its use, soon led to its being altogether discarded, and it is only very

recently that, under its new form, it has been reintroduced as a remedy. It occurred to M. Boudault that if he could separate the active constituent from the inert and useless substances associated with it in the gastric juice, he would be able to produce not only a much less disagreeable medicine, but one of greater certainty of action. This he now effects in the following manner:—The stomachs of sheep are inverted and washed under a very gentle stream of cold water, and with a blunt knife the pepsin-secreting follicles are scraped off and beaten in a mortar with a small quantity of distilled water. The liquid filtered from this, being next treated with a solution of acetate of lead, gives a copious white precipitate—peptate of lead—which is collected on a filter, and after being freed by washing from all excess of the lead salt is diffused through a small quantity of water. The suspended precipitate is next decomposed by a stream of sulphide of hydrogen, sulphide of lead and pepsin being produced. The former is separated by filtration, and the latter remains in solution. Now, if this solution of pepsin were simply to be evaporated to dryness, all due precaution not to exceed a temperature of 100° being observed, the product would be a gummy, very deliquescent mass, prone to decomposition, and altogether unfit for medicinal use. To obviate these inconveniences and give the pepsin a permanent form, M. Boudault mixes with the solution, when evaporated to the consistence of a thick syrup, starch powder in certain fixed proportions. This constitutes the "neutral pepsin" recommended by the inventor in cases where dyspepsia is complicated with abnormal acidity of the stomach. But for cases where there is no undue acidity a pepsin powder is prepared, to which *lactic acid* is added in such proportion as will give the degree of acidity which canine gastric juice is found to possess. There are also combinations of pepsin with morphia, strychnia, and iron,—*olla podrida,* which I cannot but look upon as being not only unchemical, but calculated to lead to false deductions as to the value of pepsin itself.

Pepsin should be taken between thin slices of bread, not either before or after, but—in imitation of the natural secretion—*at* a meal. As any excess of temperature beyond 120° Fahr. totally destroys its digestive property, hot fluids should never be taken either immediately before or after its exhibition; and as it is decomposed by alcohol, if spirituous liquids be used at all they should be very much diluted.

In giving this outline of the action and chemical properties of pepsin with reference to the artificial preparation now found in commerce, I defer, in the absence of absolute proof to the contrary, to the statements of those physicians who have found its action beneficial, but at the same time cannot easily understand how such marked effects can be produced by the ingestion of so small doses of a substance which is secreted even in morbid conditions of the stomach in very large quantities. To take, for example, M. Boudault's own statement, that fifteen grains of his pepsin, which is usually taken as the type of what the preparation should be, is capable of digesting sixty grains of dry fibrin. This simply amounts to saying that this quantity—the ordinary dose of the remedy—will digest 400 grains, or somewhat less than an ounce of beef muscle, and this almost homœopathic addition to a deficient secretion is recommended in the face of the fact, that were the whole quantity of gastric juice daily secreted by a healthy man expended upon the solution of bovine muscle, 14,000 grains, or thirty-two ounces, would be digested.

The pepsin, or *poudre nutrimentative*, as it is called, of commerce, is a fawn-coloured powder, having somewhat the smell of glue, and in the ordinary lactic-acid combination a sour taste.

The following tests for determining its purity have been given. The addition of a solution of acetate of lead should produce an abundant precipitate of peptate of lead; a similar addition of a solution of tannin should precipitate tannate of pepsin, and alcohol added in excess should throw down the pepsin itself. In addition to these, if we are desirous of estimating its real value, the *experimentum crucis* of testing its capability of digestion must never be neglected. For this purpose the pepsin is placed in distilled water at 60° Fahr., and the liquid filtered from the insoluble starch transferred to a small flask set in a water-bath, the temperature of which is maintained at 104° Fahr. The flask is closed with a cork, from which hangs a thread suspending a piece of coagulated white of egg or animal muscle. Matters being thus arranged, the fluid should soon attack and disintegrate the mass. The first evidence of its action will be observed when the suspended matter becomes covered with a gelatinous layer which soon dissolves, exposing a new surface to the influence of the solvent. If the weight of nitrogenized matter acted upon bear to the quantity of pepsin in the

liquid the proportion above indicated, complete solution should be effected in four hours. Agitation much promotes this result.

How far the pepsin powder now supplied will bear this practical kind of investigation may be judged from the following experiments, in which the preparations of two of the first manufacturers were employed. Fifty grains of each powder were weighed and respectively treated with an ounce of distilled water as above directed, and in the filtered solutions two slices of white of egg, each weighing sixty grains, were suspended. A temperature never exceeding 104°, and never falling below 100° Fahr., was kept up for six hours, with frequent agitation of the flasks. At the end of this time I found, that in one of the flasks a slight solvent action had been exerted, rounding the edges of the albumen, and rendering its substance less tough and coherent. In the other no alteration whatever had taken place. I then repeated the experiment under precisely similar circumstances, but substituted for the solution of pepsin a like quantity of ordinary essence of rennet—an infusion of the stomach of the calf in salt and water—to which was added a few drops of hydrochloric acid. This rapidly disintegrated the albumen, and in three hours the whole was dissolved.

The only inference which I can deduce from these experiments is, that the two samples of pepsin were inert, and therefore absolutely without value; and as they fairly represent the bulk of the preparation which is at present supplied, much caution should be exercised in depending upon its effects. The digestive power of pepsin is so easily destroyed by inattention to the temperature at which its solution is evaporated, and its assay requiring much time and care to perform, I would suggest to any one anxious really to investigate the therapeutic value of this remedy, the employment of an extemporaneously prepared fluid by maceration of a washed stomach in cold water, as a substitute for the powder at present in use. In the mean time the manufacturers may see the advantage of preparing a powder which shall at least do that which it professes.*—*Dublin Medical Press.*

* The beneficial effects which have been ascribed to pepsin may perhaps be due to the lactic acid which it contains; all weak acids are known to act as stimulants to the digestive organs.

THE FOOD OF PLANTS, AND HOW THEY TAKE IT.

By Dr. John A. Warder.

A Paper read before the Pomological and Horticultural Society of Southern Illinois.

Our investigations among animals disclose to us that some of them consume other animals for food, while others feed exclusively upon vegetable growth, and some, like man, are *omnivorous*. But a question of food remains to be investigated and answered; it is this: What is the food of plants? This I shall attempt to answer, though well aware that it is a question of no mean importance—indeed, it is the very foundation of all thorough understanding of scientific agriculture and horticulture. It involves an understanding of vegetable physiology—a science which has received much attention within the past century, but which, owing to human imperfections, has enunciated many false propositions; it has been obliged to consider, and to reconsider these, again and again; each time claiming to be right, and was so believed until proved to be otherwise. Even now, while we advocate our favorite views, the honest philosopher must admit that he is but in his A B C of the science. The doctrines upon this subject that have been enunciated by Liebig are remarkable for their perspicuity, and are the most satisfactory, though he too has his opponents, who are not willing to admit the truth of the *dicta* of the great German agricultural chemist.

Examining (as a preparatory step, before making answer) what plants are made of, we may find some guide in our investigation. Besides small quantities of certain inorganic substances, we discover certain compound bodies, which in chemical language are called proximate principles, such as cellulose, and vegetable jelly, sugar, gum, and starch, all of which are composed of similar elements, combined together in very nearly the same proportions; we also find various oily or fatty and waxy substances differing from the first in having less oxygen in their composition. Besides these we also find nitrogenous matters, that have a very important part to play in the chemical changes that the food of plants must undergo in its processes for the formation of the proximate principles just named. The two important elements in the *food* of plants, therefore, are *carbon* and *nitrogen*; the

other elements are found in water, which is composed of *oxygen* and *hydrogen*. These four elements, therefore, are of the greatest importance to plants, but of them the former, carbon and nitrogen, must claim our first and chief attention in this inquiry. It has been generally supposed that these substances were provided for plants chiefly by manures, and by the humus, or decaying vegetable matter of the soil.

The last result of the decomposition of animal and vegetable matters, after the escape of the gaseous compounds, is a dark substance called humus. It abounds in the prairie soil, in most rich soils, in manured soils; further, humus is rich in carbonic acid and ammonia; hence, when we speak of a soil being rich in humus, we mean that it is well furnished with these elements of plant-food—in other words, a rich soil.

That ammonia and carbonic acid are the sources of nitrogen and carbon, for the supply of plants, there can be no doubt; and that these substances are produced in immense quantities on the globe, and diffused through the atmosphere, we are equally assured; but we find the results of respiration, and of combustion, the escape of carbonic acid and ammonia from the craters of the volcanoes, and all our fires, and smoke stacks, do not increase the quantity in the atmosphere appreciably, for there is but a small, uncertain quantity of ammonia, and a definite, small proportion of carbonic acid. These substances are drained out of the atmosphere, and have not increased in it. Geologists tell us that the immense quantities of the coal on the earth, must have been derived from a rank vegetation existing at a former period, when it is probable that our atmosphere was very highly charged with carbonic acid gas.

How do the grasses and weeds of these great prairies and the trees of our wide and noble forests obtain their carbon, if not from the atmosphere? and yet we make no return of carbon for all that we take from them. Successive crops of charcoal have been burnt and removed from the mountain regions, where the trees can find little humus, and can return only to the soil their foliage to decay and make more; the cattle pasturing on the prairies must remove immense quantities of carbon in their tissues—the supply to the trees, grasses and weeds has been kept up from the atmosphere undoubtedly.

(*To be continued.*)

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Annales de Médecine Vétérinaire, Bruxelles, Sept., 1860.

HISTORY OF HORSE-SHOEING.

By F. Defays.

M. Defays remarks that in the examination of all the documents which history has left us from the remotest time, there is nothing up to the first century of the present era which would lead us to believe that the ancients were acquainted with horse-shoes fastened to the feet with nails. There are not even words in their language to express the denomination of the modern shoeing-smith.

When it became necessary to protect the feet of their horses, it was done by means of a sort of leather boot, fastened on with straps. The *spartæ* of which Columella speaks, were made of willow or the broom. The necessity of allowing the horses to restore their hoofs by rest after long journeys, the introduction of regular roads (causeways,) the movements of armies, and consequently cavalry, must have led the Romans at an early period to devise some means for permanently protecting the feet of their horses. We find, therefore, the hippopodes were more generally applied to sound feet. At the present time this is still the custom in Japan. Afterwards these boots were protected by an iron plate at the bottom (*Catullus*). Later, the boot was done away with, and the straps fastened to a projection of the plate itself. But this mode was found to be defective, as it wounded the legs, and it was necessary therefore to improve it. Thus we find that towards the second and third century of our era, the Romans had already iron plates fastened with nails to their horses' feet.

These sort of shoes are found in the ruins of Grachwye, near Bern; in the Roman remains of Avencium; in the Roman camps of Mount Terrible and Dalheim; in the neighbourhood of Jodoigne, Louvain, Echternach, Stuttgardt, &c. In all the places where the Romans have left traces of their sojourn, there remains of their horse-shoes have been found by the side of their relics. These shoes are particularly distinguished by a groove or fullering extending from heel to heel, in which the nail-holes are placed. These

grooves must have existed in the hippopodes to hold and protect from friction the thread which fastened the iron plate to the boot. In the fifth century, when the barbarians invaded the Roman territories, we find that some of them, as for instance the Huns, did not make use of horse-shoes (*Vegetius*), while those that came from cold countries, frequently covered with snow, and where it was necessary to have the under surface of the horses' feet roughened, we meet with a very different shoe left on the passing of these hordes to those found in the Roman remains. In fact, those found near Würtzburg in Bavaria, at Chavannes sur le Veyron, and in the tomb of Childeric the first King of France, 481, are stamped to receive square nails, similar to the frost-nails used at the present time. It is therefore not surprising to find that these shoes took the place of the fullered or Roman shoe, and those barbarians who had before none, generally adopted those used in the invaded country; hence the distribution of these two sorts of shoes has been the consequence of the appearance of the barbarians from the fifth to the eighth century. At this last epoch, the Saracens invaded Spain, and introduced there a third form of horse-shoe, which also spread over a great part of the Roman empire, and after the conquest of the Turks was found even in Transylvania; and indeed wherever the Mussulman had dominion for any length of time there have been found traces of these horse-shoes. In the Duchy of Luxemburg, and the county of Treves, the fullered shoes have been replaced by the stamped. This, too, has been the case in many parts of Belgium, which, in this respect, offers some interesting facts; as, for instance, on the east of Liège, to the extent of several leagues, the fullered shoes are still in use; while in the surrounding districts it is unknown, and the stamped shoe only used.

(*Query.*—Have we received the fullered shoe from the Romans; and, if so, at what time?)

Archiv für Thierheilkunde, Zürich, 1859.

TO CURE FUROR UTERINUS (BULLING) IN THE COW BY MANUAL MEANS.

By R. Zangger.

The cause of this affection, the author says, is in the ovaries. It may affect either one or both, and consists in the formation of cysts, which are filled with serum. These vary in size

from that of a walnut to the fist. But sometimes, he states, the alteration in the ovarium is caused by tuberculous infiltration, and in this case the manipulation recommended would be useless.

The ovarium, it is well known, contains a sort of cyst, the follicle of Graefe, filled with serum, and containing what are called the ova or eggs. On the formation of the egg, the follicle increases in size, and by development of the egg, the desire to copulation arises, and with this takes place a change in the organs of generation; the follicle of Graefe bursts, and the serum with the egg passes into the ova-duct. After this, the "heat" or "bulling" goes off, whether by impregnation or otherwise. Now, a pathological formation of a cyst in the ovarium has a similar effect, but the vesicle does not burst as in the natural state, the heat or rut therefore continues, which constitutes furor uterinus or bulling in the cow, by the permanent alteration of these organs of generation.

The bursting of the cyst is the only cure for this affection, and the way to do it is simple and without any danger. By introducing the hand into the rectum, previously emptied of the fæces, the enlarged ovarium will be easily felt, on either side of the intestine. Either one or both will be found enlarged, irregular, and elastic on the surface. A moderate pressure with the hand will suffice to burst the cyst. If both ovaries are involved, of course they must be treated in the same way. For the next few days the affection increases, but a little cooling medicine being given, and keeping the animal in a quiet, dark place, the cow, after a few weeks, comes to her milk, and frequently, in the regular time, she is found to be in calf. The peculiar appearance characteristic of this disease gradually disappears, and the animal is seldom subject to a relapse.

BRIGHT'S DISEASE OF THE KIDNEYS.

Numerous dissections of dead animals have shown that this alteration of the kidneys is of frequent occurrence in our domestic animals. This year a horse and a dog were affected with it. In the urine the albumen could be detected, and under the microscope the characteristic cylinders were satisfactorily traced.—*Clinic at the Veterinary School, Zürich.*

Giornale di Medicina Veterinaria, Torino, April, 1860.

EPIZOOTIC APHTHOUS DISEASE OF THE DOMESTIC FOWL.

By T. Tomaso, Veterinary Surgeon.

This disease manifests itself on the comb and wattles. The aphtha or vesicles are of the size of pins' heads, and of a reddish colour. Sometimes the eruption appears all over the body of the birds; they lose their appetite, droop their wings and tail, evince a disinclination to move, and about the second day the vesicles resemble pearls in shape and transparency. About the fifth day they begin to point, on the seventh they have attained their maturity, and on the eighth they break, when a little serum oozes out, after which the majority of the birds recover. Few die after the seventh day.

Necroscopia.—The combs and wattles are found to be much swollen, and of a purple or scarlet colour. The vesicles are of the size of a lentil, some are full of limpid serum, others have dried up. In the cranial cavity the meninges are somewhat injected, and the cavity contains some serum of a reddish colour. No other alteration in this organ was perceived. The mucous membranes are of a violet colour; the tongue pale; the crop empty of food, but slightly distended with gas; the stomach contains some undigested matters, emitting an acid smell; the intestines are filled with liquid of a yellow colour, and possessing a fetid odour; the mucous lining of the intestines presents some reddish spots on its surface; the lungs and the liver are normal.

The author describes a second and third form of this disease, but they vary only in intensity. The cure, or treatment, consists in giving the birds, fasting, a spoonful of the following mixture:

Antim. Pot. Tart., 20 decigrammes.
Pot. Bi-Tart., 20 grammes.
Acid. Nitric., 20 drops.
Aq. Destil., 250 grammes.

For turkeys and water-birds, the strength must be somewhat increased,—about a tenth part of the ingredients. The affected parts should also be bathed with ferruginous water, which should also be given to the birds as drink. The roost, and other places where they are kept, are to be cleansed and well ventilated, and any dead birds carefully removed, as the disease is considered highly infectious.

CALCAREOUS CONCRETIONS FOUND IN THE AORTA OF A MARE, FOUR YEARS OLD.

By Patarelli Giuseppe, Veterinary Surgeon.

On the 26th of January the author was consulted on this case. She was a mare of the Maremme race, and the symptoms were as follow:—great prostration of the vital powers; the mucous membranes highly injected; the pulse hard and frequent; the respiration increased, presenting the characters of broken wind in the last stage; tumefaction of the anterior extremities; the neck extended, the head resting on the manger; pawing with the left fore foot; attempts made to lie down, but afraid of doing so; auscultation of the chest denoted a particular noise, resembling water being poured from one vessel into another; at the region of the heart another sound, as if two pieces of wood were rubbed together, was detected, and at the other parts of the chest the parchment-sound was perceived to exist.

The *diagnosis* was intense inflammation of the lungs and the pleura, with effusion into the cavity of the chest, which caused the embarrassment of the circulation as denoted by the sound at the heart. Or it may be that there exists organic disease of the organs of circulation.

There were also manifested symptoms of colic; these, however, were to be attributed to a drastic purge which had been imprudently given the day before.

From the gravity of the disease there was little chance of any available remedy, but some sedatives were prescribed, which produced a temporary relief, only, however, of short duration. The next morning the patient died.

At the autopsy, made three hours after death, the following lesions were found:—The small intestines showed traces of inflammation; the liver was enlarged, and gorged with blood; the kidneys were slightly engorged also; the thorax was found to contain about twenty-five litres of serum, slightly tinged with blood and suspending flocculi of lymph; the pleura was covered with false membranes; the pericardium was filled with yellowish serum; the heart was covered with a false membrane, the thickness of two finger-breadths, and forming a homogeneous covering; the ventricles contained but little blood, and the parenchyma of the organ was softened. In the aorta, just before the crutch formed by the bend of this vessel, were found several calculi of various sizes.

They obstructed the parts to the extent of from four to five centimetres. They were formed under the serous coat of the artery, and were covered by it. Some adhered closely to the sides of the vessel; others were pendulous. Their composition was phosphate and carbonate of lime, with a trace of magnesia.

ROYAL COLLEGE OF VETERINARY SURGEONS.

At a Court of Examiners held on the 19th and 20th of December, the gentlemen whose names are subjoined, late students of the Royal Veterinary College, London, having passed the necessary examinations, were admitted members of the Royal College of Veterinary Surgeons:

Dec. 19*th*, 1860.

Thomas Brook . . .	Balsham, Cambridge.
Luke Wm. Walters . .	Checkley, Stafford.
William Coles	Kilmersdon, Somerset.
Robert Elkington . . .	Brandon, Warwick.
William Dale	Stanmore, Middlesex.
William Bennett . . .	Souldern, Oxon.

Dec. 20*th*, 1860.

Robert Sharpen . . .	Gresham, Norfolk.
Forrest Barclay . . .	Wickham Market, Suffolk.
William F. Chinn . .	Cardiff, South Wales.

Veterinary Jurisprudence.

A FARMER'S CASE.

Aberdare County Court.

THOMAS *v.* MORGAN.

THIS was an action brought to recover the sum of £5, for that the defendant did unlawfully suffer and allow a certain stallion or stallions to be at large on a certain piece of pasture land, at Penderrin, which is the joint property of the plaintiff and defendant, whereby the said stallion covered a filly of the plaintiff's, and thereby caused such damages as are now sought to be recovered.

Mr. Simons appeared for the plaintiff, who is a farmer in Tai Cupla, at Penderrin; and *Mr. Smith* appeared for the defendant, who is also a farmer, occupying part of the same farm as the plaintiff.

Mr. Simons very humorously opened the case, and proceeded to call witnesses.

David Thomas, the plaintiff—I am a farmer, living at Tai Cupla, Penderrin. We both live under the same master. The two farms are separate, with the exception of the Coedcae, which is jointly between us. The Coedcae is the middle of other land. Mr. Morgan, the defendant, keeps stallion ponies from eleven to twelve hands high. I am the owner of a filly, she is of the common farm breed of this county. She is now two years old. I used to turn this filly out with my other horses to the Coedcae. She was on the Coedcae last summer. I told Morgan several times to keep his stallions from the Coedcae, so as not to spoil my fillies. He said, "No, I have as much right to turn my stallions there as anything else." I complained in the hearing of a servant girl. I have a corn field close to Coedcae. I had the fillies sometimes on the field. I know that his stallions have broken into my field after the fillies. I know of no other stallions in the neighbourhood. The filly was in foal, and has had a colt. She has been permanently injured.

By Mr. Smith—I commence working my horses from two to three years old. I used her before she had a colt. I don't know that she was as good. I used her for all kinds of work on the farm. The Coedcae is not adjoining the mountain. Can't go to the mountain except through large gates. There are some stallions on the mountains. They come down sometimes when storms prevail in the winter. Defendant Morgan and myself came to live there together, about eight years ago. Morgan used to keep his stallion by the house with fetters on until last year. The only stallion I ever had was one about six months old. The little girl was with me when I cautioned him not to let his stallions into the Coedcae. We are not on the best terms with each other, but I do nothing to him, that is the truth for you. The filly and her colt are not worth half as much as the filly was before. I would not then have taken £20 for her. They sell every sort in a fair; you can have good and bad there. This one was a very good one. I have given £15 and more for two-year old fillies. I can't say what they are worth now.

Mr. Smith—Are they worth £12?

Witness—I don't know.

Mr. Smith—Are they worth £15?

Witness—You can easily know, that if they are not worth £12, there is no one so foolish as to give £15 for them.

By Mr. Smith—I know they are not worth £15 now. I will swear that I don't know what she is worth now.

By his Honour—I would not turn anything out if I knew that would injure other people. I would not turn out a bull if I knew that there were heifers there.

Mr. Simons—She is very much reduced to me in value as a farmer and always will be. I did not tell Morgan that it was the youngest stallion that covered the filly.

Anne Thomas—I was servant last year with the plaintiff. I heard him telling defendant to keep his stallions from the fillies. Defendant said, "I have as much right as you to turn what I like there." I saw defendant's stallions breaking in more than once. I saw one jumping in over the gate. They were very "mischiefful," like many other little things. I saw no other stallions there.

By Mr. Smith—I went there in May, and left last November. I had been there a little time before I turned the stallions out.

Mary Thomas—I am plaintiff's wife. I have complained to defendant several times because of his turning his stallions to the Coedcae. He said that he could turn what he liked there. I saw his stallions breaking in through the hedges after my fillies. I know of no other stallions in the neighbourhood. I know that they were kept up to last summer with fetters on their feet.

By Mr. Smith—There is a road going through the Coedcae to the mountain. It is a parish road with gates on. I don't know that a pony had been impounded from that road. I am positive that I never saw any other ponies there.

Jenkin Morgan, farmer—I live close to the defendant. I know his stallions very well. I saw them grazing on Coedcae last summer. I saw no others there. I know of no others in the neighbourhood. It would be a great injury to a filly of that age to be covered. The colt would not be worth so much.

By Mr. Smith—Fillies at two years old are not much worked. I think the filly is now worth from £15 to £20. I don't know that there are any stallions on the mountains. It is customary to turn them out to the mountains. There are gates on the road going through the Coedcae. They are generally shut.

David Havard—I live close to plaintiff and defendant. I know defendant's stallions. I saw them last summer on the Coedcae. I saw one covering a mare. I know a filly of that age would be greatly injured by being covered.

By Mr. Smith—I don't keep stallions on the next Coedcae to this. I have no stallion, nor never had one. It is common to turn stallions to the mountain. I sold a filly of the same age for £13. I would not give £13 for his now.

Mr. Simons—If the filly had been kept two years longer she would have been worth more money.

Judgment deferred to next court.

MISCELLANEA.

SMITHFIELD CLUB CATTLE AND IMPLEMENT SHOW.

The Smithfield Club Cattle and Implement Show commenced on the 11th ult., at Baker Street Bazaar. The Queen and Princess Alice accompanied the Prince Consort to the private view on the previous Monday; on Saturday, the Empress of the French graced the exhibition with her presence. The Prince Consort exhibited a steer, but was fairly beaten, the Devon cattle being very superior. The appetite of London consumes every year 270,000 oxen, 30,000 calves, 1,500,000 sheep, and 30,000 swine. The annual production of the British Agricultural Implement

Trade is computed at £2,000,000 sterling per annum, and £4,000,000 of guano, bones, and portable manures, and probably four times that value of farm-yard manure, is expended on the lands of the British Isles.

OBITUARY.

We regret to announce the death of the father of the profession, Mr. Bracy Clark, F.L.S., and member of the Institute of France. He died on the 16th ult., at the almost patriarchal age of nearly 90. His diploma bears date July 5, 1794.

Mr. B. Clark was among the earliest of the pupils of the Royal Veterinary College, and we have heard him say that he led the first horse into that establishment. After the death of the first professor, M. St. Bel, for some time he superintended the medical department of the institution; and this, no doubt, directed his attention to the then chaotic state of veterinary medicine, and induced him to write his 'Pharmacopœia Equina,' which, with his many other works—these being more numerous and more varied than those of any other veterinary author—will cause him to stand high in the estimation and remembrance of the profession.

To blend science with practice appeared to have been his desire, and his investigations into the functions of the foot of the horse, however different were the conclusions he came to from those of others, stamp him as an original and ingenious thinker; while the introduction of more scientific terms, both for certain parts of the organ and its diseases, than those employed before, was a proof of his educational acquirements and his literary abilities. It cannot but be said, that he has left abundant proofs of his endeavours to advance the veterinary profession behind him. May others emulate his example; for "by it, he being dead, yet speaketh."

We have been informed of the death of Mr. Simon Mortlock, M.R.C.S., of Adelaide, South Australia. His diploma bears date May 9, 1837.

Thus, old and young must obey the saddening summons when it comes.

"Take them, O Death! and bear away
Whatever thou canst call thine own!
Thine image, stamped upon the clay,
Doth give thee that, but that alone!"

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Communications and Cases.

ON THERAPEUTICS.

By Professor Brown, M.R.C.V.S.,

Royal Agricultural College, Cirencester.

(*Continued from p.* 12.)

DIURETICS.

Agents that excite the secretive action of the kidneys are termed "diuretics;" but, it would seem, not quite correctly, as the drugs presumed to possess the diuretic property only occasion an increase in the amount of water. The quantity of urea, being dependent upon the waste of the azotized tissues, is increased by exertion, but no medicine seems to possess the power of causing an excess of this constituent. So far as the water is concerned, nothing is so easy as to excite increased secretion, irrespective of medicinal influence; the sudden action of cold upon the skin, or mere mental excitement, will immediately produce it, as also will certain articles of diet, as carrots, turnips, and oats that have been kiln-dried. Among medicines, the various balsams, turpentine, soaps, nitrate of potash, and, in a minor degree, many saline agents, possess a diuretic action.

The office of the kidneys is to remove the products of the decomposition of the azotized textures from the body, and a large quantity of water. In certain cases, where other secretory organs are at fault, they are capable of discharging some of the constituents of other secretions; thus some of

the elements of bile, broken-up blood-discs, and various salts are by their aid eliminated from the system. The suppression of the secretion for any time is attended with the most serious consequences, while its excess is scarcely less injurious.

Although less exhausting than catharsis, polyuria causes debility in a much shorter time than would be imagined from the nature of the fluid secreted. In using diuretic agents, therefore, the full development of their action should never be sought; the more particularly as the excitement, when once produced, is likely to continue for some time, as very slight causes suffice to keep up the irritation.

Diuretics are popularly employed in a variety of cases where the secretion of urine is defective, without reference to the cause of such defect. The favorite occasions are "disurea," difficult urination from calcareous deposit, or from partial strangury. Diuretics are also frequently exhibited in various forms of dropsical effusion, as swollen legs, serous abscess, "anasarca," farcy, grease, effusion into the cavities of the thorax or abdomen, and in a variety of skin affections, under the name of surfeit.

How far the use of diuretics is beneficial in these instances we propose to inquire.

The first disease, "disurea," is essentially defective secretion, arising from a want of tone in the system. Horses that are severely worked, and roughly treated, are particularly subject to the affection, which readily yields to a course of mild tonics, liberal diet, and rest, or at least moderate work. Diuretics produce a temporary amelioration by exciting secretion; the original disease, however, is rather added to than diminished by such treatment. The employment of diuretics in "strangury," or difficult urination from calcareous deposit, is obviously indefensible; nor should we deem it at all probable that such a course would be instituted, excepting as the result of an incorrect diagnosis.

Dropsical disease affords a more plausible pretext for the use of diuretic medicines. The apparent excess of water in the system is at once a justification for the use of any means which may remove that fluid through an appropriate channel.

This reasoning, however, is only true with certain modifications. The matter demands some consideration.

First, is it not the case that, in most instances of dropsy of any part of the body, local or general debility is present? and further, is it not true that diuretics, although

they cause the almost immediate absorption of such effusion, exert no influence against their redeposition?

The practical observer, we are assured, will admit that they rather increase the tendency to effusion than diminish it.

In certain cases it may happen that excessive secretion has become so habitual to a membrane or organ, that no medicinal agent, nor any therapeutic treatment, is permanently curative.

In such cases, diuretics offer themselves as remedies, by the aid of which the patient may obtain a certain temporary relief; their use may be tolerated then, as may be the use of cathartics or stimulants, as a matter of necessity, or as a minor evil, producing some good at the cost of a gradually increasing harm. But not on these terms can we accept them as therapeutics. Even in the most acute forms of effusion in inflammatory œdema, and serous deposit from injury, we cannot see the advantage resulting from the use of powerful diuretics.

On the other side, it is to be urged that the accumulation of fluid may be fatal, or that the vessels may so acquire the habit of secretion that it may ultimately amount to a new function in the part affected. Undoubtedly, this is true, nor would we for a moment underrate the importance of removing the effused fluid as rapidly as possible from any situation, and under any circumstances. We merely, on experimental grounds, object to diuretics as inefficient for this purpose. In the course of our treatment, tonics, dietetics, and exercise form the prominent means, with frictions, pressure, and embrocations when applicable. Accepting the aid of diuretics to a limited extent, we exhibit them in doses sufficient to excite an increased secretion, which may be safely continued for a considerable time without injury to the organs or to the system; giving a preference to those agents whose action is most diffused, as nitrate of potash and sulphates of soda and magnesia, in small doses, dissolved in the drink water.

The advantages of diuretic action in cases of skin disease are presumed to depend upon a certain purification of the blood by their agency. Without questioning the influence of the kidneys in removing certain noxious matters from the system, we are not justified in assuming, under ordinary circumstances, that medicines have the power of causing the elimination of impurities through these glands: the obnoxious principle is generally a sufficient stimulant in itself; witness the action of sugar in diabetes, and the expulsion of colouring matter of blood and bile in derangement of liver. No

similar additions to the ordinary secretion are found under the action of diuretics, unless when they have caused excessive irritation and discharge of blood.

The notion, therefore, that any particular purification results, is entirely hypothetical; we are not in a position to claim more for the agents used than the property of exciting the secretion of an excess of water. Any benefit derived in skin affections can only therefore result from their influence on the general secretions, coupled probably with an improvement in the condition of the blood, due to the action of the salines administered.

Thus, diuretics are to be given under the same restrictions that we have imposed upon other therapeutics, restrictions that ordinarily oppose the full development of medicinal properties.

In defective secretion from fever, we have already advocated salines, not only on account of their effects upon the blood, but also for their beneficial action upon the general secretions. Diuretics, in like manner, are useful remedies in febrile diseases. They are further desirable when the urine is acrid, or when thickened by a large quantity of sabulous matter. An excess of water is then necessary, and a mild diuretic will be at once effective. When diuretics are indicated in cases of effusion into the areolar membrane, either from injury, or during the disease of "grease," or in inflammatory chapped heels, or serous deposits in any portion of the body, nitrate of potash is a useful agent, and may be given conveniently in the drink water. Two drachms daily for horse or ox is a sufficient quantity, if continued for a few days consecutively.

In cases where dropsy is associated with debility, as it most commonly is, tonics and diuretics may be effectually and consistently combined. Hydrothorax, ascites, and hydrops pericardii, are diseases that require such a mixed treatment. Nitrate of potash, with iodide of potassium or iodide of iron, are valuable formulæ. A milder medicine may be formed by mixing extracts of taraxacum with gentian in equal proportions; this mixture is specially adapted for the sheep; the dose may be from two drachms to half an ounce of the compound given in water.

The various balsams, turpentines, and soaps, are not found to possess any properties that render them superior to the common diuretic, nitre; hence they are not much used in veterinary practice; nor does it seem desirable, while we have an agent capable of producing all the effects we require, to multiply the means of attaining the end. The kidneys, of

all organs in the body, are most easily acted upon; nor does the practitioner hesitate to avail himself of this circumstance in the treatment of disease; the susceptibility is, however, in one sense unfortunate, as it exposes animals to the officious meddling of the ignorant, who, by obtaining cheap and powerful drugs, in the form of diuretic balls, can stimulate an important portion of the organism to any degree that may suit their tastes, to the manifest injury of the subject so maltreated.

DIAPHORETICS.

The importance of the perspiratory secretion as a means of removing from the system a large quantity of effete matter is fully recognised both by the physiologist and pathologist. During the maintenance of perfect health, the function in the lower animals is probably sufficiently active; the ordinary work necessitates a certain periodical excretion from the skin, while the absence of artificial clothing during that work permits the atmosphere to have free access to the exposed surface. When animals are suffering from disease of any kind, the perspiration is usually diminished. In inflammations, fevers, anæmia, plethora, and a variety of other morbid conditions, a dry harsh state of skin is the proof of defective function. Irrespective of any positive derangement, "inactivity" alone—what we should term in man a sedentary habit—is sufficient to occasion this diminished action of the skin.

The effects of insufficient perspiration are imperfect purification of the blood, owing to the retention of carbonic acid and other impurities, to an extent that may be estimated by calculating the area occupied by the sudoriferous follicles of the whole integument. Not only will the vitality of the body suffer from this defective elimination of impurities, and the non-absorption of the stimulant oxygen, but the other excretory organs, to wit, the lungs, liver, and kidneys, have an undue share of duty to perform,—in all probability more than they are equal to.

Perspiration is ordinarily "insensible"—or in the form of vapour, constantly escaping into the surrounding air. When produced in amount too large for the atmosphere to absorb at once, or when the evaporation is very rapid, or the atmosphere of low temperature, it is deposited as water upon the skin, and is then termed "sensible perspiration." The quantity of the secretion will generally be proportioned to the activity of the circulation, which may be excited by exercise, or by stimulant medicines, or by pain, or by a heated

atmosphere. That profuse sweating should occur under any of these conditions we can easily understand; but when we find it to result from the action of a nauseant, or during pulmonary congestion, or when it precedes death, and further, when we observe that the skin and the moisture covering it are cold instead of hot, as they under ordinary circumstances would be, we are constrained to admit the phenomena to be incomprehensible. Under all these circumstances, the system is depressed; the secretion must therefore arise from some local nervous action, and not from the usual nervous and vascular excitement.

The value of the bath in any form, for the purpose of preserving a healthy condition of the skin, is universally admitted. The impossibility however, of cleansing the enormous length of tubing distributed in the integument by any surface washing seems to have presented itself; however, only quite recently, at least in our own country, the "tables are turned" with a vengeance, and we are in a measure compelled to see that the "great unwashed," for whose particular benefit Baths and Wash-houses were established, are, after all, the really clean members of society, as, from the laborious nature of their avocations, the filth collecting in their perspiratory ducts is constantly carried out by a stream of sweat and deposited on the surface, on their under garments; while those who, in their laudable desire to preserve healthy and decent bodies, are constantly scrubbing and washing, are all the while leaving the inside full of all manner of uncleanness, and even assisting to rub the dirt into the open-mouthed canals; so that their linen after wear is in no way objectionable to the olfactory sensibilities, while the shirt of the working-man gives striking, if unpleasant, evidence of the amount of filth of which his system has been relieved. Leaving this cheering consideration to work its own way, we pass to the discussion of certain "popular fallacies" connected with the subject.

The public mind generally holds a decided abhorrence of violent contrasts both in regard to the treatment of its own and other animal bodies; it reads of the Russian, who takes a vapour-bath until he resembles in colour a boiled lobster, and then plunges into a river after a run through the snow, with mingled feelings of pity and admiration. To drink cold water, or to expose the body to cold air, while in a state of perspiration is considered tantamount to the statement that "life is no longer dear." Our infantine mind was constantly harrowed, we remember, by recitals of cases illustrative of the appalling effects of drinking cold water immediately after

exertion; and even now we have a superstitious reverence for those legends, and rather incline to the opinion that misguided persons have occasionally changed all sorts of colours in consequence of a reckless disregard of the wise precepts that have descended in a straight line from the original "oldest inhabitant."

In consequence of these wise precautions, an unfortunate horse in the road or in the field, hot, dusty, and dying of thirst, is not permitted to take the cool draught placed within his reach, from a prevalent belief that cold fluid under such circumstances must be injurious, when in truth the system is never so capable of resisting the action of extreme cold as when heated, no matter in what way. These popular delusions upon the subject of heat and cold are founded upon the fact that exertion usually precedes the excitement that accompanies perspiration. Exhaustion is a very reasonable result of exertion, and during exhaustion the body is in a particular manner sensitive to the effects of cold; therefore, instead of refusing cold draughts, or cold baths, or cold air, on the plea that the body is heated, we should only withhold them because the body is tired, and for no other reason.

The exhaustion that follows excessive perspiration is not alone consequent upon exertion, as it is observed to a certain extent after the hot-air bath, where no bodily exercise is necessary to produce excessive secretion. That "sweating" is a weakening process is admitted under ordinary circumstances; why it is so we propose to explain.

First. When produced by a heated atmosphere, or by clothing, or stimulant medicines, a certain nervous excitement is present, followed by depression, as a matter of course.

Secondly. Under all circumstances, the blood loses a large portion of its water, and the volume of the circulating mass is decreased as by the operation of bleeding.

Thirdly. When perspiration results from exertion, muscular action is an additional and very active cause, and, associated with the other two, sufficient to account for the weakness which invariably follows repeated sweatings.

If no exertion precede perspiration, the body may be exposed to the air with advantage, instead of danger. The absorption of oxygen counteracts the depression; and if in addition the animal be allowed a copious supply of cold water, the bulk of the circulating fluid is soon restored by the absorption which immediately takes place.

Not only is the activity of the functions of the skin a necessary condition of purity of body and fine health, but is even more important in disease, when a larger than ordinary

amount of effete matter is to be removed. Consequently diaphoretics are of general application; their influence, however, is very questionable. All the agents employed are powerless, unless assisted by warm clothing. Their medicinal effects, therefore, may be estimated as exceedingly low. Thus, the medicines mentioned in Morton's 'Materia Medica,' "meadow saffron," "potassio-tartrate of antimony," "acetate of ammonia," and "spirit of nitric æther," are not given with the idea that they are capable of producing sensible perspiration; nevertheless, these agents, given in small and repeated doses, and assisted by a warm atmosphere and plenty of clothing, will occasion a warm and moist condition of skin, which would not result from the clothing or atmosphere minus the action of medicine. We are all aware how far hot fluids, antimony, and alcoholic mixtures, occasion diaphoresis, at a temperature that is insufficient in itself to produce the result.

The selection of the agent will be regulated by the condition of the system. In fever and inflammation, the salts of antimony, with frictions and warm clothing, will be necessary. In rheumatism, meadow saffron is indicated. In that state of system denominated "bad condition," where nothing opposes the practice, short and quick canters will be most effective, particularly if the animal be well clothed at the time, and walked in the open air unclothed, after being sufficiently dried by friction.

The so-called Turkish bath offers at once all the conditions necessary for the production of any required amount of diaphoresis, without the aid of medicine, warm clothing, or exertion. The subject is placed in an atmosphere heated from 100° to 200° or higher, and retained there until he perspires freely; the diminished volume of the blood is restored by cold water *ad libitum*, given in the bath during the sweating; no surface-clothing is used to obstruct the free exit of the perspired fluid, and no impurities are therefore kept in contact with the skin; the surface may be cleansed by ablutions of warm or cold water according to circumstances, and after the skin is perfectly dried, the animal may be walked quietly in the air unclothed; by this latter treatment the smallest remaining trace of depression is removed by the stimulating action of the atmosphere.

Diaphoresis so induced relieves the system of many impurities, and is not attended with any of the ordinary injurious consequences. How far its application extends we have yet to discover; but its efficacy in many morbid conditions is beyond dispute, and in alluding to those disases

where diaphoretics are desirable, we shall indicate the instances where the bath has proved effectual, or where its action may be fairly tested.

Adhering to our expressed intention of treating disease upon the allopathic system, we may consistently administer "diaphoretics," or in any way induce diaphoresis, when the perspiratory fluid is secreted in too small quantities,—always on the assumption that the "defective secretion" is the principal element in the disease, and not merely a subordinate one. Diaphoresis, we have seen, is usually attended with nervous and vascular excitement. Many diaphoretic agencies are productive of stimulant effects, and consequently are not applicable to those diseases in which stimulant treatment is contra-indicated; where the stimulant action can be restricted to the surface, the objection does not apply. Our remarks, therefore, will have references to two classes of diaphoretics: those which act upon the nervous and vascular systems generally, and those which act upon the skin without producing any obvious excitement of the system.

The first class includes the "Turkish bath," which actively excites the circulation, perhaps to two or three times its ordinary rate, and to a less extent the nervous functions. Alcoholic fluids, which act in the same way, although to a comparatively trifling extent; and exercise, which occasions nervous, vascular, and muscular action together.

In the second class we place all agencies whose influence upon the skin is unconnected with systemic excitement. Potassio-tartrate of antimony, and ipecacuanha are admitted in small doses, and under favorable circumstances, to produce a moist skin. Their action is certainly anything but stimulant to the system, notwithstanding an increased activity of the cutaneous circulation follows their exhibition; we cannot, however, consider their diaphoretic action to be referable to their emetic or sedative properties. In what way the peculiar effect is produced we have no means of ascertaining, and therefore content ourselves with the fact that they occasion diaphoresis when assisted by warm clothing, without exciting the system. "Meadow saffron" and "nitric æther" do not, so far as we have observed, produce any stimulant effects; any diaphoretic action they may possess must be due, therefore, to some local influence. Hot or cold water, in considerable quantities, will sometimes produce sweating, probably on account of the increase of the bulk of the blood which is the result of their absorption. Friction and fomentations produce diaphoresis entirely by their local action, warm clothing being necessary as an adjunct.

The occurrence of perspiration under the peculiar circumstances mentioned at the commencement of our remarks, we have not essayed to explain. Nor, indeed can we connect the "cold sweats" that precede death, or occur during sphacelus, and under other conditions of general depression, with the ordinary function of the sudoriferous follicles. As phenomena they are of importance and deserve investigation; but they do not at all obscure the question under discussion, viz., the production of diaphoresis in a variety of artificial ways, and for a variety of purposes.

The diseases which call for the aid of "diaphoretics" are numerous; every disorder that is attended with a dry, harsh, or cold condition of integument may be appropriately met by them. The kind of agent will depend upon the nature of the disease; but, in some form or other, their value is universal.

In inflammation and fever, where defective action is not the predominant element, we cannot consistently suggest the use of active or stimulant diaphoretics, save indeed on the hypothesis that the good they may do in cleansing the system, and restoring the balance of circulation, will outweigh the evil that must result from their stimulant action. Such a line of argument will justify experiment; but, according to our system of treatment, we cannot admit the use of the Turkish bath, or any of the diaphoretics of the first class, to be legitimate in cases of disease, where the predominant element is "excess," and not "defect." In these affections, the salts of antimony, nitric æther, frictions, and warm clothing are clearly indicated.

Catarrh, in its various forms of common cold, influenza, and strangles, may be safely treated by the same agents; or where there is no reason to fear the consequences of excited circulation, the diaphoretics of the first class may be employed. We do not scruple to recommend the "bath" for this disease; as far as our experiments have gone, no apprehension need be entertained of injurious consequences accruing.

In skin diseases of every possible phase, active "diaphoresis" is desirable, if for no other reason, for its effects in cleansing the surface, and loosening accumulations of desquamated cuticle. Exertion, when not contra-indicated, may be tried; but, beyond dispute, the "bath" is most efficacious.

A large number of diseases may be comprehended in the term "cachæmia," or "bad blood," as the word may be literally rendered. "Glanders," "grease," "cancer," "blain," "pleuro-pneumonia," and even ordinary "bad condition," are attended with the elimination of effete matter in various

amounts from the excretory organ, and to a great extent through the skin, as the odour from the animal's body frequently proves. In such instances, the benefits arising from "sweating" can only be understood by those who have tried this plan of treatment, although, to a casual inquirer, the atmosphere of the "bath," in which a patient suffering from any of the above affections has been confined for an hour, would be tolerably strong proof of the presence of considerable quantities of morbid matters that must have been eliminated from the skin during the process. It is not our province here to enlarge upon the general treatment of special diseases; but, in passing, we venture to suggest the expediency of treating these malignant cases much on the same principles that would guide us in the attempt to decompose the effete materials that we have removed from the system—by the action of disinfectants; as the vapours of iodine or chlorine will rectify an atmosphere so rendered impure, so in a measure will compounds of those agents, particularly iodine, act in the animal's body; the penetrating power of this medicine may be judged from the fact that the agent can be easily detected in the secretions soon after the administration of its compounds.

With a full conviction of the immense value of diaphoretics in the treatment of nearly all—perhaps reflection would lead us to say, all diseases, we leave these suggestions to the consideration of the profession, merely taking leave to observe that, in our estimation, the "bath" is pre-eminently the most potent and least objectionable of diaphoretic agents.

(*To be continued.*)

PURPURA HÆMORRHAGICA.—DEATH.—EXTENSIVE DISEASE OF THE LIVER AND SPLEEN.

By A. Walker, M.R.C.V.S., Rugby.

The following case possesses so much interest, both in a physiological and pathological point of view, that I think it worthy of a place in your journal.

On December 16th, 1860, my attention was called to several horses, belonging to Mr. Darby, dealer in horses in this town, suffering from influenza, and amongst them to a gray mare, the subject of the following remarks.

She was seven years old, and had been in Mr. Darby's possession some weeks, without having had any previous illness, and had been ridden by a lady the day before I saw her, when she appeared to be in perfect health. On the following morning she was noticed by the attendant to be dull and "off her feed." I was consequently requested to see her. I found her standing in the box, appearing somewhat dull, with a slight cough and soreness of the throat, pulse 50, breathing heavy, respirations fifteen per minute, the submaxillary glands a little enlarged, a slight watery discharge from both nostrils, legs warm, ears rather cold, bowels natural. Thinking it to be an ordinary case of influenza, I ordered soft diet, the extremities to be kept warm, applied a stimulant to the throat, and gave an ordinary fever-ball.

18th.—Animal not quite so well, pulse increased to 58 per minute, breathing about the same as before, cough more troublesome, discharge from nostrils increased, and of a yellow colour, ears cold, legs warm, appetite rather better; she lies down, and the bowels are still acting naturally. Repeat the liniment to throat, and give—

Ext. Belladon., ʒij;
Potas. Nitr., ʒiij; in ball.

The attendant came the following morning, and stated that the mare was considerably better; she had coughed less, and also partaken of more food.

20th.—The animal has continued to improve until this morning, when I saw her again, and found her not so well; pulse 70 and feeble; respiration twenty in the minute; discharge from the nostrils increased, both in viscidity and quantity; Schneiderian and conjunctival membranes much injected; legs warm, ears still cold, cough much better; the bowels are now slightly constipated, and the fæces covered with yellow mucus. Gave—

Ext. Belladon., ʒij;
Potass. Nit., ʒij;
Spt. Æther. Nit., ʒiv,

in a pint of water; applied a more powerful stimulant to the throat and along the neck, and administered a clyster of warm water.

21st.—No alteration, with the exception of the bowels having been relieved.

22d.—Pulse 70, breathing eighteen in the minute; Schneiderian membrane now pale, but dotted over in places with

dark-red spots; discharge from nostrils less, legs and ears warm, bowels relaxed, fæces of the natural colour, cough nearly gone; she still eats but little, lies down regularly, but appears dull and weak.

About one o'clock of the same day, I was summoned in haste by the attendant to go and see the mare, who he said was bleeding from both nostrils, and dying. I went immediately, and found the animal reeling about the box, with mouth open, and making great efforts to breathe; a bloody fluid was trickling from both nostrils, which were clogged up with fibrinous matter, resembling that sometimes found in the ventricles of the heart after death in some debilitating diseases, and tears were flowing profusely from both eyes.

I removed several large clots from the nostrils, but finding it gave no relief, and to prevent the animal dying from suffocation, which would speedily have ensued, I at once performed tracheotomy. This afforded immediate relief; and as the animal was much prostrated, I gave Spt. Ether. Nit. ʒij in water, and ordered an attendant not to leave her.

Up to this time no swelling had shown itself on any part of the body, except the slight enlargement of the submaxillary glands, existing from the first.

23d.—During the night the animal has been very restless, frequently lying down and getting up again; the servant has had great difficulty in keeping the tube in the trachea; the face and lips have now become much swollen, so much so that the mouth could but be very slightly opened; the breathing is 27 in a minute, and carried on entirely through the tube; the nostrils are clogged up, bloody fluid is running slowly from them; the tears are tinged with blood, and falling fast from both eyes; the pulse 90, and feeble, the bowels much relaxed; she refuses all food, and has slight swellings about the knees and hocks in patches. From this time the animal gradually got worse; the swelling increased about the face to such an extent as to completely close the mouth, and she died on the morning of the 26th.

Post-mortem examination.—Being much engaged, I deferred the examination of the body until the following day, giving strict orders that it was to remain until I came to open it. Whether the attendant supposed that there was nothing in the head to be seen, I know not, but on going to examine the body on the following day, I found that the head had been cut off, and given to some hungry greyhounds, so that a very interesting part of the autopsy must be omitted.

The skin being removed, nothing particular was observable, except numerous red patches in the cellular tissue, about

the hocks and knees. Upon laying open the abdomen, and cutting through a large accumulation of fat in the mesentery—it being two or three inches in thickness—from two to three gallons of darkish-coloured fluid made its escape. All the organs were healthy, except the following: the liver was natural in size, but of a very pale clay colour, and upon being removed, was found to be very much diseased; every portion of it, except a small part of the left lobe, was so completely softened, as that within its capsule it could be spread with a knife: no rupture had taken place. The spleen was also of its natural size, but of a deep-black colour; and within its capsule its structure much resembled thick black ink. Upon the abdominal surface of the diaphragm, where it lies in contact with the right lobe of the liver, were found a great number of small, white, hard, nodular enlargements, varying in size from a pin's head to an ordinary pea. The contents of the thorax were healthy, with the exception of the lungs, which were much congested.

TRISMUS IN A COLT.

By John Darcey Peech, M.R.C.V.S., Wentworth.

The following case of trismus in a colt, being one of rather unusual occurrence, may render it worthy of a passing remark.

In the month of July last, my attention was called to a thorough-bred Barnton colt, in a large breeding establishment several miles from this place, reported to be very unwell.

On my quietly entering his box, little could be perceived to be the matter with him at the first glance, and a casual observer would not have discovered anything amiss, beyond his looking a little light in the body.

Inquiring into the history of the case, I found that he, with several others, was "put on physic" on the previous Tuesday, and the whole of them were moderately purged, with the exception of this one, whose medicine operated more briskly than that of the others. On the Thursday morning, three of the colts were found to have slight œdema of the throat, unaccompanied with soreness, the tumefaction being confined to the maxillary space and laryngeal region. With friction and mild vesicants, this quickly subsided; indeed, so much so, that by Saturday the swelling had disappeared

from the whole. The subject of this case, however, had not partaken of food from the Thursday, and continued in the same condition over Friday, Saturday, and Sunday, and on the Monday I visited him for the first time.

Having ascertained this, I carefully examined my patient, who did not show, as I previously observed, any symptom of active disease. The bowels were very much constipated, the circulation feeble, and the artery easily compressed; he moved moderately free, but carried his head in a fixed position; the respiration was normal, and the surface of the body cooler than natural. On examining the head and neck, the muscles of the face and the upper cervical muscles felt rigid, but not so much as we find them in acute tetanus. A little saliva drivelled from the lips, and he would make frequent attempts to gather up food, but was unable to collect more than a very small quantity, which he could not masticate, and it fell from his lips again. The mouth could be opened to the extent of about half an inch; and on the head being elevated, the membrana nictitans was projected over the eye quickly and forcibly.

From these symptoms, coupled with the spastic rigidity of the muscles, it was clearly a case of trismus.

Treatment.—This consisted in placing on the tongue Hyd. Chlorid., gr. xxx; a blister was applied to the throat, extending to the cervical region and maxillary space. Orders were given that he was not to be moved from the box he occupied, and to be kept in a perfect state of quietude, subjected to moderate light, and have only one attendant; also plenty of thin oatmeal gruel to be allowed him.

On the following day, August 7th, when I again visited my patient, there was not the slightest improvement apparent. The symptoms were as before reported, being neither aggravated or improved, and the anterior cervical, masseter, and adjacent muscles, were in the same spastic condition.

A second dose of Hyd. Chlorid. was administered, and some of the following embrocation applied over the blistered surface and masseter region, three times a day:

℞ Lin. Sapo. Comp., ℥x;
Ext. Belladon., ℥iij;
Tinct. Opii, f℥iij.

The extract of belladonna was well rubbed down with the liniment, and the tincture of opium added.

On my next attendance, August 9th, the first remark made was that the colt was better. His bowels had been freely unloaded, although they were not much relaxed; his general

appearance was more favorable, he had made several attempts to eat some mash, and had succeeded in eating a little, and occasionally he would pick a lock of hay. Ordered ten grains of calomel to be placed on the tongue, and the liniment to be continued in use of.

On the 11th of August I was happy to find that my young patient was decidedly improved. There was considerable relaxation of the muscles; the jaws could be freely separated a couple of inches; the head had recovered, in some measure, its natural position; the countenance was cheerful, and he was enabled to masticate partially the food given him, which consisted of bran mashes, oats, and linseed, with a little mixed grass and hay, the latter being very limited.

It will be needless to continue the report of the treatment further in detail, as it differed not from that given, and was discontinued when the patient became convalescent; so that by the 17th of the same month he was discharged, to take exercise with his companions, when the weather was favorable.

In communicating this case, my object is to add another to the list, in which deadly nightshade appears to be an important agent in the treatment of tetanic spasm. Of course, in this instance, I do not wish to give to belladonna the whole of the merit, as the opium would play its part, and that by means of absorption, the vesicated surface affording ample facility for this.

I may add, that two years ago I had a strong cart-mare suffering from tetanus; the jaws could be opened to the extent of an inch, the haw, on elevating of the head, was suddenly projected over the eye, the muscles of the cervical, dorsal, and lumbar regions were perfectly rigid, and the legs were almost as inflexible as rods of iron; and this case entirely yielded to the extract of belladonna and cannabis indicus, combined with vegetable tonics, given twice a day. It was a case of long duration, continuing some five or six weeks before perfect restoration to health took place.

A SOJOURN AMONGST THE HORSES OF BRAZIL.

By T. K. Quickfall, M.R.C.V.S., Burlington, York.

I have been for some little time in the Brazils, and during my stay in that country I had a good opportunity of observing the character, constitution, and treatment of the native

horse; and deeming a few remarks on such a subject will not be uninteresting to the readers of the *Veterinarian*, I will attempt to sketch this noble animal of a tropical climate, both in his domesticated and wild state.

I may here mention that on my voyage out to Pernambuco, when we were about twenty-one days under sail and steam, calling at Lisbon, St. Vincent, and the Cape de Verd Islands on our passage, I was entrusted with the care of six English cart-horses of great value, and was also engaged to attend them after their arrival in the country; but I was shortly relieved of my professional and other duties connected with the company I was sent out by, as the English horses, to make use of a familiar simile, melted away like snow before the sun. All of them soon found an early grave; affording ample proof that English horses, of the draught breed, at any rate, are unfitted for exportation to the Brazils.

The height of the native horse of Brazil is about fourteen hands. He is light and cleanly made, docile with gentle usage, capable of travelling at a good speed, and enduring much fatigue. It is really astonishing, considering the poor nourishment and shelter afforded to these horses by their owners, what an amount of work they will do. They are fed chiefly on the native couch-grass, which is long and coarse, and given to them in its green state, accompanied with a pailful of treacle and water to wash it down. The great majority of these animals exist on this diet alone. Some favorites, now and then, get a feed of Indian corn as well. They have no regular stables, and no fenced pastures. One or two horses are usually kept tied up near the door of the dwelling-house or hut, or at other times, several may be enclosed in the corral, which is a circular space surrounded by posts driven into the ground.

The Brazilian horse, in his wild state, is a beautiful animal, and most of them are either gray or bay in colour. They have no natural pace between the walk and the gallop; but when trained, they acquire what is termed *carrago* by the natives—a species of canter and trot combined.

I remember, when going up into the interior of the country, seeing a large company of wild horses—nearly 100 of them—silently grazing. I approached them very cautiously to within a very short distance, so as to have a good view of them, and I believe not one of them would have sold for less than twenty pounds in an English market. If they have a fault, it is a lowness in their shoulders, and being rather narrow across the loins; but, with these exceptions, their symmetry is good. Suddenly I raised myself to their view;

every eye detected the motion, exhibiting a whiteness round the pupil, as seen in the pure Arabian; every nostril was dilated and ears erect. I cracked my whip, and, with one simultaneous start, the whole of them bounded off like frightened deer, snuffing the wind in terror.

The mares are never ridden nor attempted to be tamed, but they are allowed to wander with their foals wherever they choose.

The horses in regular use are chiefly entire; but they lack the courage and rampant behaviour that generally attend the entire horse in his natural state. Dullness and a sleepy-headedness are their general features. They will stand for almost any length of time in the streets unattended, and go in large droves together without attempting to run off. They wear quite a jaded, over-worked look; most of them having sore backs and fetlocks, and unhealthy tumours existing upon them, more especially about the heels and fore extremities. The veterinary art is neither practised nor understood, and the poor brutes are allowed to perish from disease, sheerly through want of proper care and timely medical aid.

When captured, the Brazilian horse shows, for some length of time, a hatred to the torture of the rude and severe fanciful bit of the natives; but at last he is made to yield to both it and the large and heavy spurs worn by them. The horses are never shod at all, and seldom have their feet examined. If anything is done to them, it is simply the removal of the rough pieces of horn with a small axe, done while the horse is standing. I found among them some very extraordinary good hackneys, and I always rode mine in a light plain snaffle bridle and martingale, and found they rode far better this way than with the inhuman appliances of the country. No journey seemed too long for them, and if required, they would leap over any obstacle like a well-trained hunter.

The above facts may not be uninteresting to those who admire that useful and intelligent animal, the horse.

SUSPECTED POISONING OF YEARLINGS AND SHEEP WITH HEMLOCK.

By A. Bickford, M.R.C.V.S., Totness.

On the 6th of June last, I was requested to make a *post-mortem* examination of a yearling that had died in the morning

of that day. On cutting into the rumen, I noticed a peculiar green appearance of the mucous membrane, and on a further examination, I found that I could strip it off the subjacent muscular coat with the utmost possible ease. I thought the animal had eaten some vegetable poison, such as hemlock, of which there was some growing in the field on which it had been depastured.

Since June, three yearlings and five sheep have died on the same farm, and in every case the mucous membrane of the stomachs has presented the same appearance.

About twenty years since, the occupier of the estate lost forty-three sheep in the course of eighteen months. The cause of death was not then suspected. I saw the last case alive. Nothing was observed to be amiss with him the day before. When I saw him, he was down, and could not be induced to rise. The pulse was quick, the breathing accelerated, and the rumen distended with gas. I endeavoured to abstract blood—not with any idea of relieving him—but could not get more than a pint. Two hours after he died.

On making a *post-mortem* examination of the stomachs of a wether that died a few days since on another estate, I found the lining membrane to be similarly diseased. This sheep had evinced no premonitory symptoms. The heart was perfectly emptied of blood, and although I cut into the large veins of the system, I could not perceive any that was coagulated. A dirty sanguinous fluid occupied the serous cavities.

Many of the yearlings on the first farm alluded to were lame of one leg, and most of them—in fact nearly all—brought only the *heels* of the feet of the affected limbs to the ground, the *toes* being pointed upwards. Was this due to paralysis of the flexor muscles?

The blood of the yearling had coagulated, and black blood filled the right and left auricles and ventricles. I attributed the death of these animals to their having eaten some acrid vegetable poison, such as hemlock. They have no opportunity of eating yew leaves, neither are there many of the Ranunculaceæ in the fields; but there are several hemlock plants.

I am aware that the peeling off of the epithelium from the coats of the first three stomachs is frequently attributable to the disengagement of gas; but that the presence of gas in the rumen, &c., was the cause in the instances I have referred to, I find rather difficult of belief. I have seen many cases in which there has been a great deal of tympany; but in these the symptoms were altogether different from

those noticed in the several animals that died on this particular farm. For instance, when the rumen has been inordinately distended with gas, the animal has evinced considerable pain; he frequently grunts, is restless, and the breathing is perceptibly quickened. In these cases, I consider the disengagement of the gas or gases—for I believe they are carbonic acid and carburetted hydrogen, principally—is the *effect* of indigestion. But in this case I imagined the indigestion—or at least the disturbed function of digestion—to be the *effect* of the particular state of the mucous coat, and not the *cause*. The rumen was not *nearly* so much distended as were the rumens of many animals that I have known recover. The occupier of the estate has promised me that I shall have an early intimation of the next case that occurs, from which it may be hoped we shall derive more definite information.

CASE OF INTESTINAL CALCULUS.

By T. Cotton,
Student of Veterinary Medicine, Stourbridge.

January 8th, 1861.—I was requested early this morning to see a black cart gelding, aged, belonging to W. Watkins, Esq., of Stourbridge. At 7 a.m., I found him labouring under an attack of spasm of the bowels, although not very severe. He was lying down, pulse 40, and not much excited; pain was occasionally evinced, but not very acute. No fæces having been voided for some time previously, I gave—

Aloës B. Bd., ʒvj;
Tinct. Opii, ℥j, in haustus.

Threw up a glyster, and, as at midday, nothing had been voided with the enemas, and the animal appeared much in the same state as before, I gave—

Aloës B. Bd., ʒij.

in solution, and repeated the glysters. Towards evening he got worse; the pulse had risen to 60 in the minute, and was hard and wiry in tone; the breathing was much accelerated; the countenance had become anxious, and there were indications of great pain, by frequently looking at the flanks, &c. No fæces had been passed. Venesection ten pounds, and gave in bolus—

Aloës B. Bd., ʒiij;
Pulv. Opii Turc., ʒj.

At 10 p.m., applied a stimulant to abdomen, and ordered glysters to be thrown up occasionally. Next day, January 9th, animal much worse; pulse increased in number of beats, but more feeble; bowels tympanitic; nothing is voided with the glysters.

I now considered it to be inflammation of the large intestines, and Mr. F. Blakeway, M.R.C.V.S., who was present, was also of the same opinion, judging from the general appearance of the case; further, that from the obstinate constipation and tympanitic state of the bowels present, probably a calculus existed, which caused the stoppage. I afterwards had the horse led out a little, but nothing was passed, and my prognosis was unfavorable. However, I ordered hot fomentations to be applied to the abdomen, which were continued, with the glysters, at intervals throughout the day. He gradually sunk till 10 p.m., when he expired.

The *post-mortem* examination revealed the diaphragm ruptured, but it was evidently of recent occurrence, and probably took place either in the act of dying, or from being moved about after death. The intestines generally were not much inflamed, but considerable spasmodic contractions existed in different places, and especially in the single colon, in which a calculus was found, weighing two pounds avoirdupois. It was firmly impacted in the intestine, occasioning a complete stoppage thereof; was of a globular form, having a smooth, stone-like appearance externally, and consisted principally of the ammonio-magnesian phosphate, derived from the husk of the oat, and the outer covering of the grasses.

I am aware that cases of this kind are not at all of rare occurrence; still I think the symptoms attendant on each are worthy of study, inasmuch as they would often enable a practitioner to give an almost decided opinion with respect to the existence of a calculus, which, on the death of his patient, on an autopsy being made, would confirm his impressions, and tend to raise him in the public estimation.

Promptitude in execution is not sufficiently urged as an essential to efficiency. When once a design has assumed a clearly defined shape in the mind, then, if ever, is the time for action. Wait awhile, and you will find that you see less plainly the thing to be done; and that a warmed-up enthusiasm is a poor spiritless performer.

Facts and Observations.

SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS OF FRANCE.

We perceive that the government of France has, by an imperial decree, recognised the above-named society, as an establishment of public utility, and approved and sanctioned its statutes.

EXTENSION OF PLEURO-PNEUMONIA.

Mr. R. Moffatt, in a letter to Sir George Grey, Governor of the Cape of Good Hope, dated Kuruman, October 2d, 1859, states that he was not allowed by Moselekatse, the chief of the Matabele Country, South Africa, to approach nearer than his most southerly cattle outpost, about six days' journey from head quarters, from fear of introducing the lung sickness among his cattle. Men were therefore sent to bring Moffatt's wagons to where the chief lived, which was a laborious task, while to every available part about the wagons the spears and shields of the warriors, now performing the labour of oxen, were fastened. Every man in Matabele is a warrior, and is never seen removing even to the shortest distance without his weapons.

Moselekatse possesses enormous herds of cattle; these and ivory constituting his wealth.

NEW FORAGE FOR HORSES.

The exploring party into the interior of Australia, although they had succeeded in passing over a large section, were prevented gaining the opposite coast by the interference of a hostile tribe. Another expedition, grounded on the partial success attendant on this, has been organized, from which a different result is anticipated. It is stated that, for certain official reasons, the report of the travellers has not been published, but enough has transpired to enkindle hope that the value of that colony has only been very partially conceived as yet. The following extract will be interesting as affording solid ground for very sanguine anticipations as to the results of the full solution of what has hitherto been a problem, viz.—is the interior a barren waste, or is the fertility of the sea-board sustained to the very centre?

"As for animal life, there would seem to be no difficulty of living throughout the interior whatever; for the country is described as clothed most luxuriantly with native grasses of some familiar and some unknown varieties, *including a new plant specially adapted to the sustenance of horses.* It would seem, too, that nature had not been unmindful of the prospective wants of civilized man in the far interior, having already planted there that essential concomitant of civilization—the potato. It is stated that the uncivilized natives do not understand the virtues of the root, and eat the apples instead of the tubers. There is enough in what has already transpired to substantiate the assertion that the country, as you recede from the sea, is highly adapted for human life."

COAL-TAR IN SKIN DISEASES.

M. Demeaux, who discovered the antiseptic properties of coal tar, has suggested the use of the following compound, both for destroying noxious emanations, and as a remedy in skin affections:—Dissolve, by means of a water-bath, equal parts of coal-tar, soap, and alcohol. When cold, it has the consistency of soap, and is soluble in water, forming an emulsion.

COMPOSITION OF MARROW.

According to Dr. Carl Eylerts, the marrow of oxen consists of compounds of glycerine with elaic, palmitic, and a new acid which the author names *medullic.* Medullic acid has the formula $C_{42}H_{42}O_4$, and its melting point is 72·5°. The proportions in which the acids are found in the marrow are as follows:—Palmitic acid, 46 per cent.; medullic acid, 10 per cent.; elaic acid, 44 per cent.—*Chemical News.*

DIFFERENCE IN THE FAT OF THE HORSE.

It is stated that there is more margarine in the fat of the wild horse of America than there is in the horse of this country.

SAPONIFICATION OF FATS BY ANHYDROUS CARBONATES.

M. Scheurer Kestner shows that, when fats are heated with anhydrous carbonates to about 260° C., the carbonic

acid is disengaged, and the acids of the fats combine with the oxide to form true soaps. For instance, if 100 parts of tallow are heated with from 22 to 25 of carbonate of soda to 260°, an energetic action commences, the mixture swells up, and an abundance of gas is evolved. The operation must be conducted in a capacious retort to avoid loss, and the heat must be moderated as soon as the action is set up. Towards the end, however, the heat must be increased, in order to ensure the decomposition of the last traces of the fatty matter. After some hours, a yellowish, semi-fluid mass is obtained, which becomes more or less solid on cooling. When treated with water this mass slowly dissolves, yielding an opaline solution, which behaves exactly like that of ordinary soap. If carbonate of lime be employed in the proportion of 18 or 20 parts to 100 of tallow, the reaction takes place more easily than with the soda salt. With carbonate of lead the action is more violent. The same takes place in all cases where vegetable oils are used instead of tallow. In the course of these reactions, when the heat is carefully regulated, no glycerine is produced, but the oxide of glycerine is decomposed, furnishing marsh gas, free hydrogen, and a little acroleine, while the fat acids remain unacted on.

PROGRESS IN AUSTRALIA.

As several of our profession are practising in many parts of Australia, it is gratifying to read of the advancement that has taken place in that interesting and important colony.

The 'Melbourne Herald' publishes a comprehensive analysis of the statistics of Victoria. In less than a quarter of a century the population has risen from 170 to 530,000 souls, of whom 335,000 are males and 195,000 females. The Government has sold 3,000,000 of acres of land, at an average price of £2 10s. per acre, and has realised by that sale between £7,000,000 and £8,000,000 sterling, the whole of which large sum has been laid out in endeavours to improve the colony. On the 200,000 acres of town and suburban land, we have fixed property to the value of between £60,000,000 and £70,000,000 sterling, and of the 2,800,000 acres of country land we have about 1,500,000 acres enclosed and 300,000 acres under tillage. Our yield of grain last year was, in round numbers, 4,000,000 of bushels, which, at 5s. per bushel, would be equal to £1,000,000 sterling, and

our other agricultural and horticultural produce would raise up that to £2,500,000 sterling. Over our unsold lands roam 6,000,000 sheep, 700,000 head of horned cattle, 70,000 horses, and sundry other stock, from which the pastoral tenants of the Crown, besides enriching themselves, furnish us with exportable and consumable produce—with wool, tallow, hides, and skins for export, and with sheep, cattle, and pigs for slaughter—to the value of between £3,500,000 and £4,000,000 sterling. These facts are patent to all, and not to be controverted or gainsaid by any. And truth, like beauty, we all know, "when unadorned is then adorned the most." We leave the foregoing, then, to speak for itself, and proceed to another series of facts, deducible from the same official source. In less than ten years, with a bonâ fide gold-mining population never exceeding 60,000 to 80,000 souls, and now believed to be much less, owing to the withdrawal of the people to other pursuits, without a corresponding increase by immigration, we have raised between 21,000,000 and 23,000,000 of ounces of gold, valued at between £90,000,000 and £95,000,000 sterling, which has stimulated every branch of trade and industry in the colony, and otherwise tended to enrich it. We began with a gold export of less than £600,000 in 1851, and raised it to more than £10,000,000 in 1852. We dropped it to between £9,000,000 and £10,000,000 in 1854, and raised it to £11,000,000 and upwards in 1855, and continued at that rate until 1858. We then came down to £9,000,000 or thereabouts in 1859, and this year it will in all probability not be much less.

A NEW BRONZE.

ALUMINIUM is now being obtained in large quantities at Newcastle-on-Tyne, and unexpected results have been obtained from it as an alloy. Twenty parts of aluminium and eighty of copper form a bronze which has the appearance of gold, while ten parts of the former and ninety of the latter will give a compound that is singularly hard, and may be used for the bearings in machinery.

Is not this an exemplification of what science enables man to accomplish? When the new metal, aluminium, was first discovered, the question asked was, Of what use is it? But, in the above, and many other ways, is its utility now shown.

THE VETERINARIAN, FEBRUARY 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —Cicero.

VETERINARY MEDICINE AND THE ALLIED SCIENCES.

It would simply be an act of presumption were we to arrogate to ourselves any other position than that of *second* to human medicine. Here, however, we boldly take our stand; and as the study of the last-named, demands an acquaintance with several of the allied sciences, so it is with our division. The reason of this is easily assigned: the powers of life are alike in all animals; they are subject to the influence of the same physical agents; growth, endurance, and decay are governed by the same laws, differing it may be in degree, while the maintenance of health, and the consequence of its disturbance, or the production of disease, call for a corresponding observance of those principles that are based upon science. Hence the union that subsists between the two divisions of medicine, although the time was when they were but one. Hence, too, the mutual support yielded by one to the other, when they are pursued by minds rightly constituted; for all organized beings are but parts of one stupendous chain, each ministering to the good of the whole.

Here we speak not of the immaterial, the immortal part: that we exclude as foreign to our present consideration. We have nothing to do with psychology, it being altogether a far higher and a nobler study—one worthy of the most expanded thought and deepest reflection; but here altogether uncalled for, and consequently out of place, since we have to do with matter, not mind.

It has been, with some persons, a question if the so-called physical forces really exist in the organism; and whether there is not a force independent of and superior to them, termed the vital. This surely is an interesting, an important

and, we hope, a lawful inquiry, and to enter upon it demands a knowledge of several branches of natural philosophy. An investigation into the nature of the vital principle, or What is life? is one that has from time immemorial agitated the minds of philosophers, but without any satisfactory result, and perhaps it will remain unsolved for evermore. 'Tis a dark and inexplicable problem. A public writer states that he once knew "a philosopher—one of the profoundest as well as one of the most modest thinkers that our age or country has produced—who devoted many years of his life to the discovery of the principle of vitality. What was his confession at last? Simply that he had been wasting his time; for that the further he advanced into the unfathomable recesses of nature, the more hopeless did the search appear. The reason is obvious, if our pride would only permit us to make the discovery. It is simply an attempt to compress the ocean into a nutshell. Man's mind, regarded in itself, is an instrument of rare capacity and beauty, with which it is possible to achieve much, and to unravel many things which at first sight seem to defy our utmost efforts; but when from our proper sphere we pass out into the infinite, and attempt to grasp truths which the Omniscient has obviously reserved to Himself, we merely display our feebleness and our folly."

A high authority, referring to this subject, has said:

"I conceive it may be affirmed to be in strict keeping with inductive philosophy that, as the living body is admittedly composed of the common elements of matter, and as these elements are in most organic substances combined in strict accordance with the laws of chemical affinity, that—as in a multitude of instances to which the exact science of the present day is continually adding—it is recognised by all that the actions of the living body are either chemical or physical in their character, so, in reality, it is proved by the operation of physical forces, and that all the so-called vital actions are as essentially dependent upon these same powers. Views like these, as many well know, have at various epochs been enunciated with greater or less precision, but nothing has been firmly established; whilst, on the other hand, volumes have been written to prove that the phenomena of living bodies are altogether peculiar, and depending on forces to which there is nothing analogous in common matter. Even in the case of those processes which obviously are closely allied to chemical and physical phenomena, physiologists spoke of them as altogether peculiar and vital. Hence so

many of those terms, such as animal heat, vital elasticity, the chemistry of life, and so forth, which, violating in themselves the sublime unity displayed in the primary forces of nature, were coined with the express object of teaching that the living actions were altogether *sui generis*."

Still there must be a power, or a force, in the living body beyond these, or why do not the same laws always obtain? It is only when life is withdrawn that many of them come into operation. This power has been referred by some philosophers to electricity, who have considered it to be the *vis mundi*. It still remains, however, to be proved; for, although galvanism has been made to excite a muscle in the absence of its supplying nerve, or by its being transmitted along the latter, yet it is now known that the nerve-force and electricity are not governed by the same laws, or, in other words, they are differently conducted; hence they are not identical in their nature, however closely allied they may be. This may suffice to bring them under the head of correlative forces, in common with heat, and light, and electricity, which with its modifications, are considered by some philosophers to be among the common principles that pervade matter; nevertheless, it is not enough to prove their oneness.

It has been stated that Dr. Todd has pointed out that, although the muscular current is closely allied to electricity, it is so far distinguished from it that it is arrested by conductors, as when a thin film of gold is wrapped round the living muscle, whilst it readily traverses non-conductors; phenomena the very counterpart of what Professor Müller pointed out years ago in regard to the nervous and electric forces. The late Dr. Prout, seeing in every part of the animal economy unequivocal marks of its adaptation of means to ends, inferred that in the various parts of every organic body there exist intelligent agents, superior to and capable of controlling and directing the forces operating on inorganic matter, and thereby affecting the vital phenomena.

These differences of opinion, remarks the author already referred to, renders it necessary—

"always to keep in view the truth recognised by the great

teachers of physical science, that the whole of nature is full of design and of intelligent actions produced by agents in themselves unintelligent. What, in fact, in its widest acceptation, is law but the operation of the Divine will so controlling the forces of the universe as to produce a pre-ordained, specific, and intelligible result? No writer that I know of has set forth this great principle more forcibly than our great exemplar, Harvey, who is at pains to show that the common elements of matter, and the forces connected with them—air, water, fire, the ocean, the very winds which waft navies to either India, nay even round the globe, and often by opposite courses—are, as he so eloquently expresses it, subservient to the will of the Supreme, Intelligent, and Eternal God, thereby surpassing their own powers, and producing that exquisite order, harmony, and design, which are evinced as plainly on the globe we inhabit as in the most elaborate and perfect animal."

Another, in language equally as eloquent, has said that the science of medicine—

"consists in the application of a knowledge of life, and of the influences of matter upon life. If they began to study the nature, or rather the phenomena and laws, of life in man alone, they were soon irresistibly attracted to extend their observation to other creatures. As they proceeded in this study, the beauty and order and correlation of the organic and inorganic worlds opened more and more upon them; their knowledge of each animal or plant became more perfect and luminous through the constantly multiplying beams of intelligence reflected at every step. This prominent position amongst the students of nature brought the medical profession into the most friendly relations with the learned of all countries. And let no statesman or ruler of men undervalue the political power of the students of nature. Calm and secure in the armoury of truth, independent and great-hearted from the habit of free inquiry, beneficent from the contemplation of the proofs of the goodness of God, science was ever working peace and goodwill amongst men. Tyranny might control the press, blotting out the truth it feared, and publishing congenial falsehood. Science it could not control. Here, even in the most despotic countries, the human mind found healthy exercise. In all the ages of iron, when men had been held in political thraldom at home, and kept in savage enmity with their fellow-men abroad, the holy oil of science had ever tended to smooth the hardships of

domestic subjection, to soften the animosities that divided nation from nation, and to keep alive the sometimes flickering and eclipsed, but never extinguished, flame of liberty. Whatsoever the diversity of manners, language, government, —whatsoever the political differences that held nations or their rulers at variance,—the gentle and beneficent spirit of science had supplied a link of international union that had never been broken."

This subject is one so inviting, so consonant with one's feelings, and withal so true, that we may be tempted again to advert to it.

We think that we have advanced enough to show the intimate union that exists between the medical and the physical sciences—that a knowledge of the one is necessary to the acquirement of a knowledge of the other; and also of the advantages derivable therefrom. Indeed, we believe it to be an impossibility profitably or satisfactorily to study the one without the other; while the relationship in which we, as a profession, stand to the other branch of medicine, clearly points out the indispensability of our becoming conversant with them, and knowledge always brings its own reward. But we shall do well to remember what Lord Bacon has said of it, that it "is not a couch whereupon to rest a searching and restless spirit, or a terrace for a wandering and variable mind to walk up and down with a fair prospect, or a tower of state for a proud mind to raise itself upon, or a fort or commanding ground for strife or contention, or a shop for profit or sale; but a rich store-house for the glory of the Creator and the relief of man's estate."

PROPOSAL TO RE-ESTABLISH A VETERINARY INSTITUTION IN CONNECTION WITH THE ROYAL DUBLIN SOCIETY.

A PORTION of the *Irish Times* has been forwarded to us, containing a report of the council meeting of the Royal Dublin Society on the above subject, which we append.

There is much in it that awakens thought, and calls for consideration. Whatever may be done, we feel assured, will not be hastily done. We live in remarkable times. All speaks of progress. "Wisdom crieth, and understanding putteth forth her voice, so that knowledge is increased." And this we likewise know, that the more it is diffused, the greater will be the benefits resulting from it. The recognition of our profession calls for exultation. The righteous man, we are told, regardeth the life of his beast; and it is very gratifying to find, that the different agricultural societies are aware of the importance of the principles of science being applied to the treatment of the many diseases to which our horses, and sheep, and cattle are liable. And we are advocates for this union, believing it to be mutually advantageous; we therefore give to it our full concurrence and approval. Science is cosmopolitan; it seeks not its own, so much as another's wealth; it rejoices in extension, and feels no envy at the success others may attain to, but inviting all, says—

> "Our needful knowledge, like our needful good,
> Unhedged, lies open in life's common field,
> And all are welcome to the vital feast."

On looking over the earlier suggestions connected with the proposed institution, we see in them much to be commended and to warrant success. From causes that appear to be unknown, this was not realised. It remains to be seen whether, now that an immense advance has taken place in the science of veterinary medicine, its value will be more highly appreciated. We are not at all surprised that Ireland should take the subject up. The wonderment is, that it should have been allowed to remain so long at rest; although we are aware that from time to time the question has been agitated, and certain resolutions come to, which however were never carried out. There being the parent school in London, and two schools in Edinburgh, it is but reasonable that one should exist in Dublin.

We shall anxiously wait the further report of the Committee.

ROYAL DUBLIN SOCIETY.

COUNCIL MEETING—THURSDAY, NOVEMBER 29TH, 1860.

The Marquis of KILDARE, V.P., in the Chair.

Present—Lord Talbot de Malahide, Lord Dunlo, and other members of council.

The minutes of last meeting having been read, and other business transacted, the following report was unanimously adopted:

Abridged Report of Committee on the Re-establishment of a Veterinary Institution in connection with the Royal Dublin Society.

At a meeting of the Council of the Royal Dublin Society, held on Thursday, November 16th, 1860—the Marquis of Kildare, V.P., in the chair—it was referred to a committee to inquire and report to the council the principle on which the veterinary institution in connection with the society was conducted, and the cause of its discontinuance; also to consider and report upon the advisability of adopting the recommendation of re-opening the establishment, and appointing a professor, with a school of veterinary surgery.

The committee, therefore, report that an Act of Parliament "for directing the application of the sum of £5,500, granted by Parliament to the Dublin Society, for the improvement of husbandry and other useful arts in Ireland; and for granting to the said society the further sum of £10,000 for the purposes therein mentioned," received the Royal assent on the 1st day of August, 1800. That Act, among other things, specially provided for the establishment of a veterinary institution in connection with the society, in the following terms:

"That the remaining part of the said two sums of £5,500 and £10,000, and all such parts of the foregoing several sums, except the sum of £1,500 appropriated as aforesaid, as shall remain unapplied in manner aforesaid, shall be applied by the said society in procuring agricultural examinations into all or any of the counties of this kingdom, in creating drawing-schools, exhibition-rooms for artists, repositories for implements of husbandry and manufactures, buildings for a veterinary institution, and such other buildings as the society shall deem expedient; in paying a salary to a veterinary professor, and maintaining a veterinary institution," &c.

In order to show the very extended nature of the society's intentions regarding veterinary instruction, your committee beg to call attention to the following extract from the report of the Committee of Agriculture in August, 1800:

"The lectures to begin in January or February next, on the constitution, nourishment, diseases, cures, and treatment of the horse; the lectures on the constitution, &c., of neat cattle, pigs, sheep, and dogs to follow at such times and in such succession as the lecturer shall judge expedient.

"A forge will be necessary for the practical instruction on the modes of shoeing; and it is recommended that the professors be not debarred from keeping as many as they may choose in any part of the town for their private practice, and that for the first year they may be allowed to shoe horses for their own emolument at the society's forge, they defraying all charges of attendance, coals, iron, and every expense.

"In the plan approved of by the society, provision is made for building ten boxes or loose stalls for invalid horses, &c.; these are for the purpose of allowing lectures in the nature of clinical ones, and on the cures by surgical operation. It is proposed that all the animals brought in there for that purpose shall be maintained and taken care of at the expense of the society, all such expenses to be repaid them by the owner if the cure be effected;

but if the professors shall, on application, be allowed to occupy them with any diseased or disordered cattle, on their own private account, all the expense of food and attendance is to be defrayed by the professors.

"It is also proposed to provide suitable dwellings for the professors within the society's ground, and to accommodate them immediately with some of the houses which are hereafter to be thrown down; and that there should be a covered area for showing cattle, and a room for dissecting in, and for students to learn thereby the anatomy of the animal.

"It is proposed that in every year after the first a full course of lectures be given on each of the animals whose health is a material object of rural economy—the horse, the neat cattle, the sheep, the pig, and the dog, and it is probable they may be advantageously extended to all poultry which require food or attendance to rear them, or to fit them for market.

"That in these lectures the various breeds now in repute in Great Britain, particularly of sheep and neat cattle, be accurately described and compared; their several excellencies pointed out, their shapes marked, and the nature of soil or food most advantageous for each clearly explained.

"Premiums will in time be proposed for the students who shall, on public examination, show the greatest progress.

"It is further proposed that these lectures shall be accompanied with a course from Dr. Wade, the botanic professor, on the nature of the several grasses and native plants of Ireland, so far as they ought to be the object of the farmer's attention or knowledge in respect to each species of animal, and in what degree they are calculated to give him strength, or fat, or value, or otherwise."

The committee further recommended that Mr. Thomas Peall and Mr. George Watts should be appointed forthwith; Mr. Peall to be professor and lecturer, at £100 a year, and Mr. Watts to be assistant professor and practitioner, at £50, their salaries commencing on the 1st day of December following.

These recommendations were approved by the society, and ordered to be carried into execution.

Your committee cannot state what reasons finally induced the society to discontinue its veterinary establishment, except a deficiency of funds caused by the diminished grant; for it would appear from the tenour of every minute which is recorded in the society's reports that the utmost anxiety was invariably expressed for the permanent continuance of this important branch of the society's operations.

Your committee beg further to state that they consider that the foregoing details prove sufficiently that the appointment of a veterinary professor, and the establishment of a veterinary institution, is quite within the province of the society; and that, if it was formerly expedient, both for the credit of the society and the benefit of the community, to carry these plans into execution, it is much more so at the present day, when the live stock of the country have become largely increased in numbers, and—partly through the medium of the society—very much increased in value. In conclusion, your committee believe that the re-establishment of a veterinary department, in connection with your society, would prove of immense utility to the country.

(Signed) Dunlo, Chairman.

It was resolved—"That the report of the sub-committee on the re-establishment of the veterinary institution, &c., be adopted, and that it be referred back to the committee to inquire and report by what means the recommendation of the committee can be carried into effect."

Extracts from British and Foreign Journals.

FACTS AND FALLACIES CONNECTED WITH THE RESEARCH FOR ARSENIC AND ANTIMONY; WITH SUGGESTIONS FOR A METHOD OF SEPARATING THESE POISONS FROM ORGANIC MATTER.

By Alfred S. Taylor, M.D., F.R.S.

(*Continued from p.* 41.)

Reinsch's Process.

Hugo Reinsch first announced his discovery in 1841.* He accidentally observed that a piece of copper which he had immersed in commercial hydrochloric acid acquired, after a time, a dark-gray metallic deposit, resembling iron. This proved, on examination, to be a deposit of metallic arsenic derived from an impure sample of hydrochloric acid. The acid was found to contain one grain of arsenious acid in 500 grains. This deposition of arsenic was observed to take place on copper whether the acid was hot or cold, and whether it was concentrated or diluted, but in all cases heat was found to accelerate it considerably. Reinsch further ascertained that copper might be boiled in a solution of arsenious acid, or in pure hydrochloric acid, without any similar deposit being formed. Provided there is not too free an access of air, and the metallic copper is wholly immersed in the acid, the metal will remain unchanged for a much longer period in the concentrated than in the diluted acid. If there is a free exposure to air, the metal is rapidly dissolved (as subchloride) by the concentrated acid, but not by the diluted acid.

The proportion of acid to water which was found most convenient for the deposition of arsenic is not stated by Reinsch. One part of acid by measure to six, eight, or ten of water, have been the proportions generally adopted by analysts. From his experiments Reinsch drew the conclusion that the arsenic was so completely removed by copper on boiling it in the acid, that the residuary liquid gave no trace of the poison on the subsequent use of Marsh's apparatus.

* Erdmann's 'Journal für Praktische Chemie,' No. 19, 1841. 'Philosophical Magazine,' No. 126, Dec., 1841. 'Annales d'Hygiène et de Médecine Légale,' 1843, t. i, p. 439. See also a paper by the writer in the 'British and Foreign Medical Review' for July, 1843, p. 281.

There were other and manifest conveniences attending the use of this method. The arsenic not being converted to a gas and burnt, there was no loss of the poison; it was entirely removed from the fluid in a state of pure metal, and the separation of it might be suspended and resumed at any subsequent period. Reinsch thought that his process was beyond the reach of any fallacy, because, when arsenic was really present in a liquid, even in small quantity, the deposit commenced in a few minutes, and was completed in half an hour; and during this time, if arsenic was not present, the copper would be still bright on its surface, and present no appearance which could give rise to any error.* The facts upon which the discoverer relied for the demonstration of the presence of arsenic were—1, the gray, metallic appearance of the deposit; 2, the conversion of this deposit by a moderate heat to a crystalline sublimate of arsenious acid, in which the octahedral form of the crystals would be recognisable; 3, the solubility of these crystals in water, and the results of the application of the liquid reagents for arsenic to the solution. The only important addition which has been since made to these corroborative tests consists in the conversion of a sublimate of the crystals to arsenious acid by nitric acid, and the production of red arseniate of silver on the addition of a solution of nitrate of silver to the dry residue.

With the above-mentioned results, Reinsch pronounced his process to be entirely free from any fallacy, or from any possibility of error. He also thought that there could be no loss of arsenic. He asserted that it was the most delicate of all the processes hitherto contrived for the detection of this poison, and that it would reveal its presence even when it formed only the 1-200,000th part of the solution. This remark obviously applies to the mere effects of dilution. The actual weight of arsenic which can be detected in a minimum quantity of water is not assigned by Reinsch.

Most analysts who have had occasion to employ this process can corroborate the statement of the discoverer, to the effect that it is simple, delicate, and easy of application. In regard to its delicacy—if the deposition of a metallic film on copper is taken as a criterion, I can state, from direct experiment, that the 1-4000th part of a grain of arsenious acid admits of detection. This small quantity of arsenic, dissolved in a minim of water and mixed with ten minims of

* 'Annales d'Hygiène,' 1843, i, 449. This view is not strictly correct: small quantities of arsenic or antimony contained in large quantities of organic matter require some hours' boiling for their entire separation and deposition.

water and two of hydrochloric acid, gave a thin, but well-marked, steel-blue coating to the twelfth part of a square inch of bright copper-foil. On the introduction of a second piece of the same size, there was scarcely any perceptible deposit. The arsenic in this experiment formed only the 1-96,000th part of the weight of the liquid in which it was dissolved. When, however, the quantity of water was increased threefold, there was no deposit on the copper, even after boiling for a few minutes. By a still longer boiling, and a concentration of the liquid, the arsenic would no doubt have revealed itself.

It is proper to remark, in this place, that the delicacy of the process is affected, not only by the quantity of liquid in which the arsenic is diffused, but by the surface of metallic copper employed in the experiment. For the detection of minute quantities, the polished copper-foil employed should not exceed the eighth of an inch square, and the arsenic should be diffused through a minimum of liquid. By thus diminishing the amount of metallic surface to be coated, it is easy to demonstrate that a quantity of arsenic may be detected by Reinsch's process which Marsh's process would entirely fail to reveal, even under its most improved modifications.

Reinsch makes but a slight reference to the use of his process for detecting arsenic in *organic matter*. He advises that the contents of the stomach and intestines should be boiled in pure hydrochloric acid mixed with distilled water, that the acid decoction should be filtered, and the filtered liquid boiled with one or more pieces of copper. The existence of arsenic might, he states, be in this manner demonstrated even in the bones, although he relates no experiment in support of this opinion.

At the date of publication of his process, it does not appear that Reinsch had practically applied it to the detection of arsenic in the fluids or solids of a dead body. He had no idea, apparently, of its important application to the separation of arsenic from the tissues. The only fact which I have found recorded on this subject is that he made a mixture composed of potatoes, soup, milk, &c., and introduced into it half a grain of arsenic. He boiled the whole with pure hydrochloric acid, diluted with its weight of water, filtered the liquid, and treated the filtrate with metallic copper. He found that the arsenical deposit was as easily obtained on the copper, in this experiment, as if acidulated water only had been used.

In the prosecution of his researches on arsenic, Reinsch

found that *Antimony* formed an obstacle to the application of his process, as it did to that of Marsh. Tin and lead were not deposited under the circumstances; bismuth, mercury, and silver were deposited on copper, but in such a form as to create no difficulty to the analyst. The only serious objection was found to exist in antimony. This metal was precipitated on copper under precisely similar circumstances to arsenic. The colour was iron-gray, or, when the antimony was in very small proportion, of a peculiar reddish or violet tint. Reinsch placed great reliance upon this colour as evidence of the presence of antimony. It is always procurable by sufficiently diluting the antimonial liquid, or by reducing, if necessary, the proportion of antimony present. To distinguish by some positive characters the antimonial deposit on copper when it had acquired the iron-gray lustre of arsenic was a problem left unsolved by Reinsch. He merely states that, if the copper, having on it the antimonial deposit, be heated, a white, amorphous film of oxide of antimony is sublimed in place of the well-marked crystalline sublimate yielded by the arsenical deposit on copper under similar circumstances. His process, therefore, in reference to antimony, was very imperfect. It served only to reveal the presence of arsenic, either when existing alone or when combined with antimony and deposited with it on copper. I have found, in operating on mixtures of small quantities of arsenic and antimony—when the acid liquid has been brought to the boiling point, and polished copper is plunged into it—that the antimony is first deposited in a violet film, which rapidly loses its colour by increasing in thickness, and by becoming coated with a layer of metallic arsenic. When heat is applied to the copper having on it a deposit of antimony or arsenic, or a mixture of the two, it will be found that arsenic is more easily volatilized. A heat of about 380° to 400° is sufficient to produce a crystalline sublimate of arsenic, and at this temperature antimony remains fixed: hence, in addition to the colour of the film, its fixedness at a moderate heat becomes an additional criterion of its antimonial nature.

One of the most simple and satisfactory methods of distinguishing the deposit of antimony on copper from that of arsenic is to boil the copper in a weak solution of potash, containing no lead as impurity. This method was suggested by Mr. Watson, of Bolton, and was first employed by him in medico-legal analysis. By agitating the copper in the alkaline liquid, and occasionally exposing it to air in the tube in which the experiment is performed, the metallic antimony is rapidly oxidized and converted to a soluble anti-

monite of potash. The alkaline liquid is poured off, or, if necessary, filtered,—acidulated with hydrochloric acid, and a current of washed sulphuretted hydrogen gas is then passed into it. An orange- or reddish-coloured sulphide of antimony is precipitated. This may be collected on a filter and washed with strong ammonia, in which it is insoluble. As sulphide of arsenic is quite soluble in ammonia, the insolubility of the precipitate in this menstruum is a proof of its antimonial character. Any sulphide of arsenic contained in the precipitate would of course be removed by ammonia at this stage of the process. If, as it frequently happens, the solution of potash contains lead, sulphuretted hydrogen should be passed at once into the alkaline solution, and the liquid filtered. Sulphide of lead is thus separated, and sulphide of antimony may now be obtained from the alkaline filtrate by acidulating it with hydrochloric acid.

In the late cases of antimonial poisoning at Liverpool, Dr. Miller, Dr. Edwards, and myself, carried the demonstration a stage further. The sulphide of antimony, collected on the filter, was boiled in strong and pure hydrochloric acid, and after the odour of sulphuretted hydrogen had disappeared, the acid liquid was introduced with pure zinc into a small Marsh's tube, constructed for the purpose, and the dried gas submitted to a red heat in a capillary glass tube. A well-marked metallic deposit, having the characters of antimony, was thus obtained. A certain quantity of precipitated sulphide is required for obtaining this additional corroboration.

If a sufficient quantity of oxide can be procured as a sublimate by heating one or more pieces of copper coated with antimony, this oxide may be dissolved in a small quantity of a strong solution of pure tartaric acid; and this solution, on being treated with a current of washed sulphuretted hydrogen gas, gives a precipitate of orange-red sulphide of antimony. This method was successfully adopted by Dr. Edwards in some of his numerous analyses in the Liverpool cases of antimonial poisoning (1860).

In his 'Reports' for October, 1856, Dr. Odling published a method of testing the antimonial deposit on copper by boiling the metal with a weak solution of permanganate of potash and potash. The antimony is here oxidized at the expense of the oxygen of the permanganate; by Mr. Watson's method it is simply oxidized by exposure to air. Of the two, the latter is less open to objection.

A method which I had previously adopted consisted in deflagrating the copper with the antimonial deposit in a

mixture of nitrate and carbonate of soda. Antimoniate of soda was thus formed. This, when dissolved in water and acidulated with hydrochloric or tartaric acid, yielded, under a current of sulphuretted hydrogen gas, a deposit of sulphide of antimony, the colour of which, however, was liable to be obscured by an admixture with some sulphur. This mode of corroboration is not so delicate as that proposed by Mr. Watson.

The process of Reinsch, therefore, is now rendered as satisfactory for the detection of antimony as of arsenic; and by comparison with the process of Marsh, it is not only more delicate, but far more convenient in its application. Marsh's process may be used in the manner above described simply for corroboration.

In comparing the two processes for the separation of antimony from liquids, I have found that Reinsch's method is twenty times more delicate in revealing the presence of antimony than that of Marsh, as it is usually employed.

Thus, a minim of water containing the 1-2000th part of a grain of tartarised antimony, mixed with ten minims of water and two of hydrochloric acid, gave a violet-coloured deposit of metallic antimony on boiling it in a piece of pure copper-foil corresponding to one twelfth of a square inch. A second piece of equal size introduced came out of the liquid untarnished; hence all the antimony had been deposited. Estimated by the degree of dilution, the proportion of antimony here separated was not more than the 1-48,000 part of the liquid. These appear to be the limits of Reinsch's process for antimony; and it will be seen that it is twice as delicate for arsenic, since the 1-4000th part of a grain of the latter metal admits of separation as a visible deposit.

The introduction of Reinsch's method gave great facility to the detection of arsenic in the *tissues*. The organ or solid containing arsenic was cut up and boiled in the requisite proportions of water and acid; it yielded a liquid which readily gave a deposit of metallic arsenic on copper. In some cases the acid liquid was strained or filtered off and tested; in others, the copper was at once boiled with the organ cut into small pieces. In either case the long and troublesome carbonisation of the viscera was dispensed with; and the frothing in Marsh's process, as well as the ambiguous stains from a variety of substances, were no longer obstacles to the analyst. This method has been very extensively employed in this country in judicial researches. It has been used by Dr. Christison, Dr. Douglas Maclagan,

Dr. Geoghegan, Mr. Watson, Mr. Herapath, and other analysts of repute for many years; and the result of their united experience appears to be, that it is admirably adapted for the detection and separation of arsenic from the tissues of the body.

The first record of its employment in this country for the detection of absorbed arsenic in the tissues, for medico-legal evidence, was in the case of Mrs. Gilmour, who was tried in Edinburgh, in January, 1844, on the charge of murdering her husband by poison. Dr. Christison found arsenic in comparatively large quantity in the liver, by boiling a portion of this organ with diluted muriatic acid and copper. This was the second instance in which, up to that date, the poison had been found in the liver in this country. In conjunction with Dr. Penny, of Glasgow, he has used this process up to a recent date, namely, in the case of Madeleine Smith, who was tried at Edinburgh on a charge of poisoning, in June, 1857.* In the last edition of his 'Poisons,' p. 271, Dr. Christison says of the discovery of Reinsch, that "it forms the groundwork of the best process of all yet proposed for the detection of arsenic in solution." In short, those who have tried the two processes have in the end generally preferred that of Reinsch. Mr. Herapath, of Bristol, who has had great experience in the examination of cases of arsenical poisoning, states that he prefers, and has always acted upon, the principle first proposed by Reinsch.† With this strong testimony in its favour, it cannot be a matter of surprise that Reinsch's process has been and continues to be so much employed by English analysts for the detection of arsenic in the dead body.

There is this difference between the two discoverers, Marsh and Reinsch—while the former suggested a useful application of facts already made known by others, the latter discovered for himself the simple fact upon which his process is based. Until within a recent period it was thought, too, that the materials used in the process of Reinsch were far less liable to give rise to fallacious results than the materials required for the process of Marsh. The investigations, however, which were carried out by Dr. Odling and myself in the case of Isabella Banks (the case of 'The Queen against Smethurst,' August, 1859) showed that there was a latent fallacy connected with the use of Reinsch's process, of the existence of which neither Reinsch nor any toxicologist of

* 'Report of Trial by Irvine,' 1857, p. 61.

† 'Ure's 'Dictionary of Arts and Manufactures,' Part i, November, 1859, p. 191.

repute had had, up to that date, the slightest suspicion. This was the discovery of arsenic in all the best and so-called purest varieties of copper, whether as foil, gauze, or wire, and in sufficient proportion to give rise, under certain conditions, to fallacious results.

(*To be continued.*)

VIVISECTIONAL CRUELTIES.

To the Editor of the 'Lancet.'

Sir,—The inhuman practice of dissecting animals while still living has recently attracted a greater degree of public attention in France and England than at any former period, with a view to its abolition, or at all events the diminution of its abuses. From the inquiries made on the subject by the London and Paris Societies for the Prevention of Cruelty to Animals, it appears that the supposed advantages of this practice in a physiological point of view are not so great as members of your profession formerly imagined. Mr. Perry, for instance, in a letter which appeared in the *Lancet* of the 24th November, states "that he witnessed operations of this nature at the veterinary schools of Paris from 9 a.m. till 5 p.m., for the instruction of pupils in practical surgery, not for the elucidation of physiological phenomena, but merely as an exercise or drill to render them expert in the use of operating instruments. That he remonstrated with the professors on the cruelty of such a practice, but in vain, although they admitted its inutility for any other purpose than that of accustoming pupils to scenes of blood and the shrinking of the flesh from the cruelties of the knife.

If such cruelties are necessary for such purposes, one would imagine that the knowledge thus acquired would be as easily obtained at the slaughter-houses of butchers or knackers' yards. These professors at Paris might as well have replied to the remonstrances of Mr. Perry in the same manner as the cook did when accused of unnecessary cruelty in frying eels while still alive—that he thought so himself when he first commenced, but that now they had become accustomed to it they did not appear to mind it. Against such logic the friends of humanity should enter their protest.

The Paris Society for the Prevention of Cruelty to Animals,

being actuated by a praiseworthy desire to provide a remedy for such revolting practices, have had a Report made on the subject by some of their most scientific and learned men, a copy of which has been sent to the London Society, which is equally anxious to co-operate for that purpose. As a member of the Committee of this Society, my object in troubling you on the present occasion is in the hope of eliciting some observations from your numerous professional readers as to whether or not such cruel practices are indispensable for the acquirement of physiological knowledge? as when doctors differ on such points, little can be expected from the unlearned members of that Committee, with a limited knowledge and an unlimited amount of ignorance as to the mysteries of the Æsculapian art. I ventured to remind certain members of that art, on a recent visit to Paris of a deputation from the London Society, that

> "Ce que nous connoissons est peu de chose,
> Ce que nous ignorons est immense."

That this observation might apply to researches for important discoveries in the bowels of the earth, with its unlimited boundaries; but how it could apply to researches in the bowels, flesh, and fibres of living animals on the surface of the earth, the boundaries of whose bodies are so limited, is incomprehensible to the uninitiated in the mysteries of that art, more particularly when they find some of its leading professors protesting against its utility, and giving the preference to experiments on dead bodies. The names of some of these eminent men are, nevertheless, quoted in this Report as *favorable* to that practice.

To the experiments of Sir Charles Bell, for instance, it stated that they considered themselves indebted for physiological acquirements so fruitful in therapeutical application, and they also gave the names, as favorable to these views, of Magendie, Müller, Valentin, Longet, &c. This Report we referred, amongst others, to Mr. Macilwain, F.R.C.S., &c., who has directed his attention for a series of years to this subject, and published various observations on its inutility, and who was, moreover, a contemporary of Sir Charles Bell. Mr. Macilwain quoted the authority of Sir Charles himself, to the effect "that the object in view could be better attained after life was extinct, as he found that on having the animal put to death, he was better able to conduct the operation, not from consideration of the sufferings of the animal, but because its sensations under such sufferings

interfered with the attainment of that object, and obscured his reasonings on the experiments."

Mr. Macilwain also quotes Longet, another eminent authority referred to in that Report, as approving of Sir Charles Bell's views in favour of vivisection; whereas Longet's written opinions were, "That experiments on animals of different species, so far from leading to useful results as regarded human beings, had a tendency to mislead, and consequently that it was necessary to have recourse to pathological facts founded on experiments on human beings." Longet further observed with regard to Magendie, who was more celebrated than any other man for that practice, "that the great importance attached by him to experiments on the sacrificed bodies of living animals was an importance that only existed in his own imagination;" or, in other words, that vivisection was regarded by him more as a trade for his personal advantage than as a science for professional acquirements.

This Report was also referred to Professor Owen, one of our first physiological authorities of the present day, who observed, with reference to the allegations as to the repetition of such practices being necessary for the instruction of pupils, "That no teacher of physiology is justified in repeating any vivisectional experiments merely to show its known results to his class or to others. It is the practice of vivisection, in place of physiological induction, pursued for the same end, against which *humanity*, *Christianity*, and *civilization* should alike protest."

When we have the evidence of this eminent authority, as regards the abuses of that inhuman practice, in support of the opinions of Sir Charles Bell and Longet, quoted in that Report as favorable to it, you will, by affording your professional readers an opportunity of giving their opinions on this subject, be rendering a service to the cause of humanity, and to those dumb animals so useful to man, for whose services such ungrateful returns are so frequently made, more particularly in the case of horses, as will appear by the following extract from a work just published by Sir Francis Head, 'The Horse and his Rider:'

"What a disgrace it is to France, and especially to her brave army, that while every cavalry soldier who distinguishes himself in action, covered with medals and *glory*, may proudly end his days in the Hôtel des Invalides, the horse that carried him in all his brilliant charges, &c., when he is worn out and unfit for service, is liable to be led into an arena in the heart of 'the empire,' to be before the public, not honoured nor rewarded, but inch by inch, and bit and bit, to

be dissected alive, until by the last sigh from his lungs, and by the last pulsation from his heart, he ends his account with his inconsiderate, ungenerous, and ungrateful country!"

As the author of this work is, I believe, a personal friend of the Emperor of the French, these observations will, no doubt, make an impression that will have a tendency to mitigate such sufferings, if not abolish such practices, in France. Trusting, also, that by the aid of the *Lancet*, unnecessary bleedings may, in like cases, be abolished in both countries,

I remain, Sir,
Your very obedient servant,
JOHN SCOTT LILLIE.

THE ACTION OF MEDICINES AND OF POISONS.

By M. CLAUDE BERNARD.

FROM a lecture 'On the General Effects of Medicinal Substances,' lately published in the *Medical Times and Gazette*, we extract the following:

"It is therefore our opinion that medicines, as well as poisons, exert their power exclusively upon certain histological elements, even in cases in which they appear to produce a general perturbation of the whole system. Thus, for instance, we find that strychnia localizes its action entirely upon the sensitive nerves; and that wherever the torrent of the circulation conveys it, all the properties of the recurrent nervous fibres are destroyed: so that even before reaching the spinal cord it has already paralysed the extremities of the nerves which revert towards their central axis. On the other hand, woorara concentrates upon the motor nerves alone its noxious influence, and wherever it meets them, paralyses at once their properties; and in this manner, without doing the slightest injury to glands, muscles, vessels, or other tissues, it arrests at one blow the most indispensable functions of life. But the action of poisons introduced into the blood is not invariably directed towards the nervous system. All the other tissues, and even the blood itself, have their own peculiar poisons, capable of modifying their vital properties. Both digitalis, and the juice of the upas antiar, enjoy the power of destroying muscular contractility throughout the entire system. We

find, however, a difference in the intensity with which these poisons act on the various orders of muscles; a difference with which the stimulating properties of electricity, which act so powerfully upon certain systems of muscles, and are comparatively so feeble as regards others, has already rendered us familiar. But the nervous system, after the introduction of these poisons into the economy, remains wholly unimpaired; and through the suspended action of the heart alone is it in their power to produce death. A substance of a very different kind, the oxide of carbon, neither attacks muscular nor nervous fibres. It acts exclusively on the blood-globules, which of course are to be viewed in the light of a living tissue, as well as other histological elements. Introduced into the lungs, the oxide of carbon fixes upon the globules which circulate in the pulmonary vessels; and such is its affinity for the blood-cells, that a perfectly stable chemical compound appears to be produced, which the presence of oxygen is no longer able to destroy. In this manner is the important function which devolves upon the globules abolished at once. How, in fact, would it be possible any longer for them to imbibe carbonic acid, and exchange it for oxygen in the capillaries of the lungs? The purposes of respiration being in this manner eluded, the blood-globules circulate in the vessels side by side with carbonic acid gas held in solution in the blood, without contributing in the slightest degree to the natural process of elimination which takes place in the lungs; and the animal at last dies in a peculiar state of asphyxia, the blood still retaining as before its ruddy arterial colour. Here, then, we find an influence of the most extensive and general kind exerted over the whole economy through exclusively local means; a peculiar histological element having been modified, all the other tissues are deprived of an indispensable stimulus,—a fact which amply illustrates the mechanism through which the effects of poison ultimately pervade the whole frame: the toxic substance, circulating with the blood, fixes upon its favorite tissue wherever it exists. To adduce one more instance of this; the action of arsenic entirely resembles that of the substance we have just mentioned. It fixes also upon the blood-globules, but does not entirely suppress their action; it only tends to diminish the activity of the perpetual exchange carried on by their means between oxygen and carbonic acid; a state of things which, when confined within proper limits, is not wholly incompatible with health, and, under such circumstances, produces, as a natural result, a certain degree of obesity. (Schmidt.)

"The action of medicinal substances must not be viewed in a different light; it resembles, in every respect, that of poisons. Nerves, muscles, blood-globules, and other tissues, enjoy peculiar vital properties, the intensity of which is modified through medical interference, sometimes for the purpose of increasing, sometimes for that of lowering, their activity; and the action of foreign bodies, whether medicinal or poisonous, can be rendered general only through the nervous or vascular system. But, in this respect, a wide distinction arises between sensitive and motor fibres, which experiments on living animals have placed in a strong light. Let woorara be injected into an animal's veins, or simply introduced under the skin after the vessels of one of its extremities have been tied, the motor nerves are paralysed throughout the system, and it becomes impossible to produce muscular contraction by acting upon them; but the nerves of that single limb, the vessels of which have been tied, alone retain their physiological power, and provoke contraction when galvanized or otherwise excited. It is therefore clear that motor nerves give merely birth to local phenomena, and are incapable of acting reciprocally upon each other, through the central axis, in which they all unite. Far different is the mode of action of the sensitive fibres: let strychnia, or any other poison which holds them under its influence, be introduced into the circulating fluid, after tying, as before, the principal vessels of one limb, and it will be found that the operation has been performed in vain, convulsions being produced in that very limb, through mere nervous agency, as well as on other points. Supposing *all* the posterior roots which arise from the spinal cord to have been divided, no convulsions, of course, would be produced; but let a single root be left untouched, and through this single channel the necessary impulsion will be given; the blood which circulates throughout the system, and conveys the toxic substance into every part, brings it in contact with the extremities of that sensitive root, which alone remains uninjured, and still communicates with the spinal cord; and general effects are at once produced. How different, therefore, do we find the part played by sensitive and motor nerves to be!

"It would therefore appear that the various substances which the physician employs exert their influence, not upon organs, but upon tissues; not upon the apparatus itself, taken as a whole, but upon *some* of the histological elements of which it is composed. It would be an entirely mistaken notion to suppose that digitalis paralyses the heart; not upon the heart itself, but upon the muscular fibres which enter

into its structure, is the action of that body directed, the nerves, vessels, &c., remaining, in the mean time, perfectly sound.

"There is, besides, no room whatever for astonishment, in the extraordinary energy which poisons display, when administered to the higher animals, while the lower classes remain infinitely less sensible to their action. A bird is struck dead, as if by lightning, by a dose of digitaline, which slowly destroys a mammiferous animal of an equal size, and is not sufficiently strong to kill a reptile. The fact is averred with regard to other toxic substances, as you are perfectly aware: histological elements are submitted, in fact, to the influence of external agents, in direct proportion to their vital energy.

"But not only do the tissues of various animals differ with respect to the degree of sensibility which they exhibit under the action of foreign bodies; the proposition is equally true, when applied to homologous tissues in the very same animal. Thus digitaline, long before it acts upon the contractile powers of other muscles, arrests the motions of the heart; a result which may, no doubt, be attributed to the ceaseless activity of the cardiac fibres: being, therefore, of all muscles the most energetic in the performance of their functions, they are naturally found to be, at the same time, those which experience, long before the rest, the noxious influence of poisons. We are aware, besides, that a striking inequality is observed in the results obtained by simulating various systems of muscles through different means; and that muscular fibres which act in obedience to the will are infinitely more sensible to the galvanic stimulus than those which it is not in our power to contract at will.

"You therefore perceive, gentlemen, that the general effects obtained by the use of medicinal agents are to be explained by the modifications which they produce in the primitive elements of which our tissues are composed."

THE FOOD OF PLANTS, AND HOW THEY TAKE IT.

By Dr. John A. Warder.

A Paper read before the Pomological and Horticultural Society of Southern Illinois.

(*Continued from p.* 51.)

We are told that the northern provinces of Holland export a million pounds of nitrogen annually in their cheese; this must have been taken into the organisms of the cows, from

the ground, through the grasses upon which they feed. Man makes no compensation for this. Whence can it come? undoubtedly from the atmosphere, which is the great medium through which it is silently conveyed from the great craters of volcanoes that pour out with their molten lavas invisible streams also of carbonate of ammonia.

Boussingault's experiments, which were conducted on a large scale, confirm these views: he had them continued on one spot during twenty-one years; he carefully weighed all the manure applied, and all the crops harvested, and the quantity of carbon, hydrogen, oxygen, nitrogen, and ashes, of both manure and crop, were carefully estimated in the whole of both, by means of chemical analysis. Now for the result: the annual harvest, on an average, gained twice as much nitrogen, three times as much carbon and hydrogen, and four times as much oxygen, as had been applied to the soil in manure.

Here we find the value and the beauty of the science of chemistry and its application to practice; this depends too upon what chemists call the law of proportions, which may be thus stated:—Each element or different kind of simple matter will combine with others in certain definite proportions; thus, carbonic acid, a compound, is always composed of oxygen and carbon, in the proportions of 16 by weight of the former united with 6 of the latter substance or element. Ammonia always contains 3 of hydrogen with 14 nitrogen; but, referring to the experiments of Boussingault, and believing that carbonic acid, ammonia, and water are the food of plants, we find that they contain more oxygen than is needed for the plants—more than their tissues contain; hence we infer that oxygen must be set free—a fact long ago discovered by absolute experiment, and verified by every tyro in chemistry: and here we have another beautiful proof of the wisdom of the arrangement. This oxygen, necessary for animal life, as it is the great supporter of respiration, and equally necessary to combustion, is eliminated by plant life, and sent to renew and purify the atmosphere by the very plants that had first removed the noxious compounds from the air:

Carbonic acid	Oxygen	16	2
	Carbon	6	1
Water	Oxygen	8	1
	Hydrogen	1	1
Ammonia	Hydrogen	3	3
	Nitrogen	14	1

Here we find a grand exchange or interchange of elements of matter between the three great kingdoms of nature. "Decomposition and the process of respiration set free all vegetable and animal substances (diminishing the amount of oxygen

in the air), in the form of carbonic acid, ammonia, and water, which diffuse themselves in the atmosphere. The plant takes possession of these substances, and forms from them (accompanied by an incessant *increase* of the oxygen of the atmosphere) some compounds that are rich in carbon and hydrogen, but devoid of nitrogen, such as starch, gum, sugar, and the various fatty matters, and others that are rich in nitrogen, namely, albumen, fibrine, and casein. These compounds are for the service of the animal, who builds up its corporeal frame from the latter, and burns the former in the respiratory process, for maintenance of the necessary heat. This theory stands now firm and unshakeable upon the facts which have been brought forward, and the naturalist is perfectly correct when he says, that man, through the mediation of plants, in the first instance, *lives upon air*. Or, we may express it in this way: the plant collects matters from the atmosphere, and compounds from them the food of man; but life itself is only a process of combustion, of which decomposition is the final conclusion. Through this combustion all the constituents return back into the air, and only a small quantity of ashes remains to the earth, from whence it came. But from these slow, *invisible* flames rises a new-born phœnix, the immortal soul, into regions where our science has no longer any value.'"*

Humus is however a most valuable element of soils, being carbon in a state of minute division; as carbon it is almost indestructible; as carbon it does not appear to be taken up by plants; its important rôle is to absorb water from the atmosphere, and to absorb and retain for the use of plants—to which it readily yields them—the carbonic acid and the ammonia from the air; in this power it appears to have no equal. Humus, therefore, always contains water and those gaseous matters which are the food of plants, and whenever it yields up a portion to growing vegetation, it absorbs fresh supplies from the atmosphere. This humus is therefore not the food of plants, as was formerly supposed, but it is the *food-bearer*, the storehouse or *pantry*, holding the gaseous food of plants.

Other elements are needed by plants as food, however—mineral elements—that do not come from the atmosphere, but from the soil itself; hence we find a flora peculiar to certain regions, and some plants that are never found in other soils than those peculiarly adapted to them. So also with our manures; they must be selected in accordance with the peculiar wants of the crops to which they are to be applied, and with the particular composition of the soil upon which they are to be sown. This is the basis of agri-

* Schleiden, 'The Plant,' p. 152.

cultural chemistry, and by its aid, if properly conducted, we learn not only the elements contained by any given soil, but those substances that appear to be the necessary constituents of any particular crop; and thus we may be guided in the application of manures to any soil, and for any crop, with some degree of certainty, instead of blindly and empirically applying this or that kind of manure, which we may have heard or read was a successful application to the crop in question. What proved successful on one soil might be quite useless on another, where a different element of plant-food is deficient. This will explain the very contradictory accounts which we receive from sources equally reliable in our agricultural publications, and in the experience of farmers.

We sometimes find that the richest soils, as we call them, rich in humus or vegetable mould, will produce enormous crops of one kind of plant, but fail to produce an adequate return, if sown with other crops. This has been satisfactorily explained by Liebig, to whom we are indebted for much of our knowledge on true agricultural chemistry at the present day, for the clearest views and the safest, because the soundest, postulates. He tells us that wheat does not flourish on soils that are rich in pure vegetable mould, because this plant needs *silex* as an element necessary to its healthy constitution, and without which indeed it cannot exist. This substance it does not find in vegetable mould. Liebig discovered this by burning plants; in this process the organic elements were dissipated by forming gaseous compounds that escaped, while a certain portion remained fixed, as ashes—composed of lime, silex, soda, and potash, salt, bone-earth, gypsum, &c.—substances which could not be volatilized. His investigations further proved, that any given plant generally yields nearly the same proportion of ash, composed of almost exactly the same substances, and also that different plants furnished ashes for very different composition.

Theodore de Saussure, in his 'Researches on Vegetation,' was the first to point out the constant occurrence of determinate mineral constituents in determinate plants. (Schleiden.)

Upon which Liebig takes this position:—"Since the organic nutriment stands everywhere in equal abundance at the service of all plants, the cause of the great difference of vegetation cannot be sought therein, consequently it must lie in the inorganic constituents, and it is essentially indifferent whether we convey manure to the field, or burn it first and strew the ashes on the soil, since its efficacy is dependent solely on the constitution of the ashes:" a position

which is rather startling in its first enunciation, but one which is founded in fact and which is incontrovertible, if we admit that manure is plant-food, though the mechanical effect of some kinds of manure would not be had by their ashes alone.

Now it a fair inference that all of these several substances are intentionally introduced into the plants for some wise purpose, not merely for man's use, but for the well-being of the plants themselves, to which, indeed, they are necessary parts, and that if a plant cannot procure all of the various substances needed for its perfect development, it must fail to produce its highest result, as we invariably find to be the case.

The farmers about Philadelphia (many years ago) thought they were doing the very best practice, when they purchased and brought back to their farms a large load of manure, for every load of produce which they sold and took away from the soil; they also thought it was best to feed as many animals as they could supply on the farm for the sake of making as much barn-yard manure as possible. In this they were right: they had a just appreciation of that most valuable material, but in their application of this manure they did not act so wisely as they might now do—they were guided by a limited and erring *experience*, not by *science*. The wheat crop was looked upon as the source of revenue in consequence of the nature of their lands; and a long-continued course of bad farming robbing the soil of some of its necessary elements, this crop had been reduced to the minimum amount of profitable culture, often below this: hence the very natural conclusion of these improving agriculturists was to manure their wheat crops. They were delighted with the results; the yield went on steadily increasing to a certain point; but they found at the same time that the amount of grain was increased, they were having a larger growth of straw, which did not stand up well, and they were subjected to losses from many diseases not before incident to the crop, and thus their hopes were often blasted. Somebody suggested that as he had observed this effect did not occur in a place where lime abounded in the soil, this substance might exert a beneficial influence. It was used with the happiest results, but they continued the bad practice of applying manure to the wheat crop—bad for two reasons.

1st.—The wheat was sold off the farm and did not yield any return, as would have been the case with other crops, and from this observation was deduced the axiom and practice of a few *best farmers*—never apply yard manure to *man crops*, but always to the *cattle crops;* the latter, being increased in amount, enable the farmer to feed more largely, and thus to produce more of the fertilising material for the renovation of the soil.

2d.—It was bad policy to apply manure to the wheat crop, because the best portions of the mass were generally dissipated into the air, lost to the owner, by means of the fermentation that occurred in the manure heaps that were piled up to wait all through the summer, until the proper season of applying to the wheat in the autumn. From observations of the loss that thus ensued, and in consideration of the axiom above referred to, a few of the most intelligent farmers learned to apply their manure exclusively to the *cattle* crops, and to apply it fresh from the yards, in a partially decomposed state, instead of waiting until much of the most valuable portions had escaped. Those also who looked further and observed the absorbing power of certain substances, and who also learned that this volatile ammonia which was wasted from the manure could be chemically *fixed* or rendered non-volatile, still continued to heap their manures, but at the same time to *compost* them with suitable materials, loam, sods, road scrapings, swamp muck, &c. &c., and to apply gypsum to the mass, whenever they could detect ammonia escaping from it. Many also went so far as to erect sheds to protect the pile from the action of the weather, and to use pumps, by which the watery parts should be repeatedly thrown back upon the pile, to encourage the decomposition of the woody fibre it contained. For many crops the manure is thus brought into a much better condition, and by the fermentation a large proportion of the seeds of weeds would lose their vitality. Such a compost, half loam or peat, is thought better, load for load, than fresh yard manure.

To recur to the main question, let me again refer to the great German philosopher, who has divided cultivated vegetables into four classes, according as one or other of the important inorganic elements predominates in their ashes.

1st. *Alkali plants.*—Those which contain double alkaline salts, such as beets and potatoes—the vine.

2d. *Lime plants.*—Those that contain the earths, especially lime and magnesia, as clover, peas, beans, &c.

3d. *Silex plants.*—Those that contain silex, as the grasses.

4th. *Phosphorous plants.*—Those that contain the phosphates, such as wheat, corn, rye, oats, &c., the cereals—fruits.

With these lights before us, and with the full understanding and adoption of the proposition that *all manure* is but *food of plants*, and that the *stimuli* of vegetation are heat, light, and perhaps electricity, with which latter upon the present occasion we need have nothing to do, we may hope to indicate a practice in the supply of plant-food, or manure, that will be productive of good results; and as a summing up, the following propositions may be announced:

1st. Ascertain the chemical character of the whole of the plant to be fed or matured—the crop to be grown.

2d. Ascertain whether the soil upon which we intend to sow the seed contains a sufficiency of all the inorganic elements needed by the crop.

3d. If there be any deficiency of any one of these elements, let it be supplied at once with the needful material in a condition to be accessible and available to the plant; but we must avoid excess.

4th. Ascertain whether there be any acrid or poisonous substances in the soil, that would prove injurious to the plant; even an excess of some of those elements that are needful constituents of the vegetation that is desired will, in some cases, prove fatal to success—this is especially true of the alkalies and alkaline earths in a caustic state; but the latter, lime, is soon neutralized by exposure to the air. It is also true of sulphate of iron, also corrected by lime.

5th. In the application of manures of any kind, whether yard manure, more concentrated compounds of excrementitious and other animal matters, or those substances that are called *special and mineral* manures, care must be exercised to have these matters properly comminuted, and for this purpose they may be mingled and diluted with common soil—thus they may be the more evenly and regularly distributed. This is especially the case with guano, boiled or ground bones—oil-cake, poudrette, &c.

6th. In the use of yard manures, the great question, as to whether it shall be applied green or thoroughly fermented and composted, the answer must depend upon the character of the soil, as to its texture, and also upon the nature of the crop to which it is to be applied.

7th. For corn, potatoes, and other field crops, apply it green, and in the spring of the year, particularly on clayey soils. For gooseberries, currants, shrubbery, &c., where it may be useful also as a mulch, apply it on the top of the freshly dressed soil, either in the fall or early spring, but the former is better. For grass lands, apply late in the autumn or early in the spring—without regard to the moon's phase. For gardens, vineyards, and in all cases where it is an important desideratum to avoid weeds, and where the soil does not need the disintegrating influence of decaying vegetable fibre, let it be very thoroughly composted, but let this process and the fermentation attendant upon it be very closely watched and kept under control; such manure can be thoroughly incorporated with the soil and be accessible to the roots.

(*To be continued.*)

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

REVIEW.

Traité de la Castration des Animaux domestiques. Par M. Gourdon, Docteur en Médecine, chef des travaux d'Anatomie et de Chirurgie à l'école impériale Vétérinaire de Toulouse.

A TREATISE ON THE CASTRATION OF DOMESTIC ANIMALS.

This is the most complete work on this important subject that has yet been published. The author traces the history of the operation up to the Pentateuch, and follows it through Egyptian civilisation to the Greeks and Latins, Plinius and the authors of the Roman Empire, the history of the dark and middle ages, down to the present time. There is no writing during these remote periods that he has not examined, and he records whatever is of use or instructive.

The anatomy of the parts to be operated on, being of the first importance, is accurately described, and illustrated by woodcuts, in which are correctly represented the tunics of the testicles, the cord, the spermatic gland and its connexions, the posterior septum, on which the ramifications of the artery terminate, the inguinal ring, where it is often necessary to introduce the knife in case of hernia.

He next considers the age of the animal, the time, and season of the year at which it is most convenient for the operation to be performed; also the best method of doing it. That by the aid of the clams seems to be the safest; and of the two ways, that by the covered testicle is recommended by the author, as there is little danger arising from compressing the nerves by this mode. As to its causing tetanus, M. Gourdon entertains no fear, since the larger branches of the nerve which ramify over the cremaster hardly reach those parts, and the compression of the minute branches would be productive of little danger. The operation by the clams is, however, not without its inconvenience. Scirrhous

productions are frequently the dire consequences, and to this the author has given a long article. Passing the finger round the cord, as is sometimes done to break down the adhesions, is a practice, he says, to be condemned, for instead of preventing the production of scirrhus, it is more likely to cause it. Another cause is when the clams are placed too low, and part of the cord is exposed to the action of the air. Another danger to be apprehended is that of peritonitis. In this affection the author remarks that the inflammation does not extend to the serous membrane of the abdomen, and he therefore considers the peritonitis of castration to be peculiar, resembling metro-peritonitis in the human subject.

The method, without incising the scrotum, is the twisting of the cord (bistourage); the manipulation of which consists in passing the thumb between the erythroïdal tunic and the dartos, separating these two membranes by a strong pressure through the scrotum, and thus effecting the subcutaneous torsion of the cord by a simple manipulation. This operation is more difficult in the solipedes than in ruminants, on which it has been practised anterior to the fourteenth century. The castration of small animals may be done by simple excision, or by drawing them out (arrachement), at the same time twisting the cord or not.

The operation of castration by the hot iron in ruminants, as well as in the horse, was known to the ancients in the sixth century. It was then described by Palladius as a new discovery, and as being preferable to those methods then in use. The castration of those animals affected with cryptorchidis or monorchidis the author gives a minute account of, and also of the necessity of operating in all cases where it is possible; but the operation can only be undertaken when the testicles are near the inguinal ring. The *modus operandi* varies little, notwithstanding the apparent discrepancies of the different authors who have performed this operation, as they all come to the same in the end, viz., the opening of the scrotum, the dilatation of the inguinal canal, the ligature of the testicle, &c.

The first description of a similar operation is from M. Marrel, who operated on a monorchid horse in 1838. One of the testicles, which had descended, had been removed by bistourage. The animal, after being cast, was placed in the same position as for ordinary castration. The operator then made an incision in the lower part of the abdomen, just above the scrotum, and while an assistant maintained the intestines in their position, he searched for the testicle in the abdomen. He found the ring of the great oblique

to be closed by a hard, solid eminence, and he drew the testicle out, which was hard, about the size of a hen's egg, and had a flattened cord doubled up. He then applied a ligature in two places, amputated the testicle, and closed the opening by the twisted suture, over which an adhesive plaister was put, the whole being supported by a proper bandage. Thirty-three days after the sutures came off, and the cicatrix was perfect. The same practitioner performed a similar operation on a colt three years old, with the same success; and also on an ass, four years old. Without doubting the correctness of these cases, the author does not comprehend why, the testicle being engaged in the inguinal ring, the operator should make his incision so as to lay bare the intestines, and be obliged to have them kept in their place by the aid of an assistant. The incision must have been made, not in the direction of the ring, but at the side of it. This plan is not the best, but has, however, succeeded three times. Brogniez has also tried the castration of the monorchidis, and according to a paper read by him at the "Société de Médecine Vétérinaire," he says, "lay the animal on his back, incise the skin and the dartos to the extent of from five to six centimètres, dilate the inguinal ring by means of a pair of pincers implanted in it, pushing forward the small oblique muscle;" and, without adding any other details, M. Brogniez declares that this manipulation suffices to bring the testicle spontaneously through the ring by its own specific gravity; that the operation is without danger, easy of cure, and without any fear of the intestines coming down. The process of M. Van Haelst is as follows:—Fix the horse in the same position as for the ordinary operation; make an incision large enough to introduce the hand. At the place where the testicle ought to be, divide the subjacent yellow tissue to the same extent; introduce the hand into the inguinal ring by keeping the fingers united, breaking down the cellular tissue which is in the way. Arrived at the inguinal canal, pass the finger between the parietes and the testicle, and after having by a circular movement isolated the testicle from its adhesion, draw it out by moderate traction, so as to be able to apply a ligature on the cord; this done, close the opening by sutures, leaving the testicle inside, the end of the ligature being left long enough to hang out of the wound. The animal is now allowed to get up, and is to be placed in a stall, which is raised behind, so as to force the intestines toward the diaphragm, and thereby prevent hernia. At the end of four days, remove the sutures, and by that time the testicles and the ligature will escape through the opening. The

cure is effected in about the same time as in ordinary cases of castration.

The second section of M. Gourdon's work is on the *Castration of Females* (spaying). The most important of these is the cow, which has been known for a long time. That of the sow, and smaller animals, is mentioned in the Talmud of the Jews, where the castration of females is proscribed without any generic designation.

The first information on this subject is a passage in Oliver de Serres, from which we know that castration was performed on cows and goats as far back as the sixteenth century. This is confirmed by Thomas Bartholin, from whom we learn that the peasants of that time castrated the mare, the cow, and the sow, by the excision of the female testicles (ovaries). The practice has since continued in Germany, Styria, and Prussia, but more particularly on the young animal, with a view to fattening. Thomas Winn, a farmer in the United States, was the first person who conceived the idea of practising the operation to favour the secretion of milk. M. Levrat, veterinary surgeon at Lausanne, castrated a cow in 1832, in the presence of Dr. Mayor, his eminent compatriot. After M. Levrat, whose long-continued experiments were given to the public, ought to be mentioned MM. Régère, Putot, Desbans, d'Extrane, Lorin, Aubin, Morin, Rey, Roche-Lubin, Prangé, and lastly, M. Charlier, who has more especially devoted himself to this operation. That which has greatly contributed to M. Charlier's success is a new method of operating, which is not attended with the danger attendant on the former *modus operandi*, so that the castration of cows may now be performed without any more danger than that of the male subject.

The advantage obtained from the castration of the cow is not only a more abundant secretion of milk, but the milk, it is affirmed by all who have tasted it, is better, being richer in butter and cheese than the milk of the other cows. M. Menard, who has adopted this plan, states that, before castration, his average quantity per cow was 1890 litres per annum; since castration, it is 3300 litres. When put to fattening, the animals also require less provender, accumulate more fat, and the meat is of better quality, resembling ox-beef. The primitive way of operating was by opening the side, and seeking for the ovaries in the abdomen. This seems to have been the method employed by Thomas Winn, and is that employed by M. Levrat, to whom we are indebted for the first description of the manual operation; and in this way it has continued down to the time of M. Charlier with but

slight modification, without, however, at all altering the principle. The operation per vaginam only dates from 1850. The idea is claimed by two veterinary practitioners, MM. Prangé and Charlier, and their respective claims remain unsettled to the present day. When M. Charlier first began to practise this mode of operating, he used four instruments: first, a dilator of the vagina; second, a curved bistoury passing into the handle; third, a long-handled pair of forceps; fourth, a pair of torsion forceps. These instruments are to be about fifty centimetres in length. The arm, well greased, is introduced into the vagina, and when the uneasiness which the animal at first evinces has somewhat subsided, the dilator is introduced, and fixed in the os uteri, and by moving the spring, the organ becomes distended. The bistoury is now introduced, the blade pushed out of the handle, and an incision is made in the upper part of the vagina, in the centre, and about two fingers' breadth from the os uteri. The hand and bistoury and dilator are now withdrawn, and on the hand being re-introduced, the operator with the index and middle fingers seeks the ovaries, which he brings into the vagina, and these are secured by the forceps fixed a little above on the ovarian ligament. This done, the forceps are held by the assistant pressing them tightly, but without pulling; the torsion forceps are now introduced, and directed towards the hand, which has remained in the vagina, the ovary is then placed between the fangs. The twisting is done from the outside of the vulva, with a slight traction at each twist. The ovary is thus gradually detached and drawn out, and the same is done with the other. The forceps being now withdrawn, the ligament enters into the abdomen, and no further treatment is required. When the cow is strong, and the vagina large, the dilator may be dispensed with, using the left hand to push the uterus back and distend the vagina, while the incision is made with the right. Such is the process adopted by M. Charlier to castrate the cow, which he has since much modified and perfected by the invention of other instruments, of which the woodcuts in this work give a correct idea.

M. Lolin has further simplified the operation by using only three instruments, namely, a covered bistoury and two forceps. M. Colin makes his incision, not seven or eight centimètres from the neck of the uterus, but close to it, where the walls of the vagina are more on the stretch, and consequently dispenses with the dilator of the vagina. The incision, according to him, need not be so small as to admit only two fingers, but may be made large enough to admit

the hand. The extirpation of the ovaries does not essentially differ from that by M. Charlier.

Another mode of castrating is that by ligature, recommended by M. Prangé. This is to avoid the torsion, which, according to M. Prangé, cannot be done without being liable to serious consequences, on account of the broad attachment of the ovaries to the ligament. M. Prangé proceeds to operate in the same way as M. Charlier, and after having brought the ovary in the vagina, he applies a ligature with a sliding noose over it, the ends of which are kept in the left hand, and by pulling both ends it is tightened above the ovary, which is afterwards excised. The ligature is either left hanging out at the vulva, or in the vagina, attached to a cork. M. Prangé does not describe the instrument by which he excises the ovaries.

Castration of the mare was unknown to the ancients. It was introduced about the seventeenth century, and became so general that it was found necessary for the government in France to interfere and forbid it; after which, without being abandoned, it was but little practised. The operation was performed, as in the other females, by an opening made in the flank. M. Charlier operates the same way as in the cow, by the vagina. There are, however, some anatomical differences which it is necessary to study. The operation is recommended in cases where mares are difficult to manage, or lose their condition and health by always horsing.

In a supplementary note M. Gourdon enters into the history of castration in man, which in some rare instances is resorted to as a medical means, as for instance in sarcocele of the testicle, or in case of cancerous degeneration of that organ. But the majority of instances have been to create in the individuals a special inaptitude, so as to appropriate them to certain purposes incompatible with the organs of virility, in the opinion of those who employed them. These individuals are called eunuchs. An ancient tradition, if it is to be credited, refers its antiquity to Semiramis, who, it is said, ordered all the weak and deformed children of the male sex to be castrated. Whatever credence may be attached to this, there is no doubt of its antiquity; for a great number of eunuchs existed in Assyria, Persia, and other countries in the East. All the Greek and Latin authors are unanimous on this subject. With the kings of Mede and Persia these eunuchs acquired great influence, from the time of Cyrus, who had 2000 of them, and who formed a special guard. The eunuchs were obtained from every country, but most commonly from Egypt, which has always possessed the privilege of this execrable industry. There also existed a

law which punished the violation of women by castration, and this tended much to increase the number of these degraded beings. The only exception to this custom was among the Jews, where the castration of men and animals was forbidden by the laws of Moses.

There were in ancient times three species of eunuchs: first, the ενοῦχος, properly speaking, was deprived of the whole of the organs of generation; secondly, the Σπαδων, was deprived only of the testicles; thirdly, the θλιβιας, the one that had nothing cut off, but by compression the organs were rendered unfit for the secretion of the seminal fluid. The operation was performed by the tonsores or barbers, and also by the mangonoes (eunuch-dealers), and sometimes by the medical men; and being done often without the slightest precaution, many fell a sacrifice to it, particularly when the whole of the organs were extirpated. The operation was performed at any time of life, but more frequently during childhood. Aristotle describes the effects of the operation, and distinguishes the difference produced on the young and adults; which proves that at that time castration was performed on children and men without distinction. Most of the children were operated upon while at the breast of the mother. At a period nearer to our time we still find the operation in practice in divers parts of the old continent. Thus Tavernier informs us that the king of Boutan, in the Himalaya, sells yearly 20,000 eunuchs in the neighbouring markets. According to the brothers Abbadie, who travelled in Abyssinia from 1838 to 1845, in the wars of those countries all the prisoners are thus mutilated. But it is in those countries subjected to Islamism that the practice mostly prevails. There, as every one knows, the eunuchs are found in great numbers. They are principally employed to guard the harems, and the traffic is continued in our time the same as formerly. They come from Upper Egypt and Nubia; but what is not generally known is, that the Coptic Christian monks prepare the victims of this shameful commerce, and thus supply the Mussulman world with eunuchs. They buy for this purpose young negroes from six to nine years old, which are brought by the caravans of Sennâar or Darfour. They operate on them in the most barbarous manner, by amputating at one cut the whole of the organs of generation; after which they bury them up to their bellies in sand for twenty-four hours, when they are taken out and dressed with an ointment composed of loam and oil. One fourth of them die from the operation, which tends to fill the immense cemetery annexed to the convent of these barbarous and

covetous monks. The price of the survivors, thus enhanced, is from 1500 to 3000 piastres.

In Europe the practice of castrating of men has been also maintained, more or less, in some countries. Thus, in Spain and Holland adultery was punished by castration. In Germany and France it was formerly had recourse to, to cure certain diseases; as, for instance, leprosy, gout, elephantiasis, insanity, and hernia. In the latter affection it was considered indispensable; but at last the disastrous results of a species of quacks, who, under pretext of preventing scrotal hernia, deprived a number of children of their organs of generation, led to the Royal Society of Medicine being consulted on it in 1776, and they obtained a law forbidding the operation of castration being resorted to as a cure for hernia.

Finally, this criminal practice has been perpetrated in a Christian country—in Italy, and particularly in Rome, where one would naturally have thought that the influence of religious sentiments would long since have extinguished it. Its object is to conserve the soprano voice of the singers, who perform indiscriminately in the churches and the theatres.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD JANUARY 16, 1861.

PRESENT:—The President, Messrs. Braby, Ernes, Dickens, Ellis, Hunt, Harpley, Jex, Lawson, Moon, Robinson, Stanley, Silvester, Wallis, Withers, Professors Spooner and Simonds, and the Secretary.

J. WILKINSON, Esq., the President, in the Chair.

The minutes of the preceeding meeting were read and signed.

A letter was read from Mr. Lambert, requesting the return of his examination fee, as he had not appeared before the Board; when it was decided that the examination fee be not returned, but that Mr. Lambert may be at liberty to present himself for examination before any future meeting of the Board, on the usual notice being given.

Communications were read from the Foreign Office, accompanied by a number of documents sent from the Saxon Government to the English Government, for the use of the Royal College of Veterinary Surgeons; when, on the

motion of *Mr. Dickens*, seconded by *Mr. Withers*, it was decided that the documents be received, and that the thanks of the Council be given for the same. Also, that the Council of the Royal College of Veterinary Surgeons will communicate with the authorities of the Veterinary Schools, and will not fail, in due time, to forward any similar communications they may receive from those establishments to be forwarded to the Saxon schools.

A correspondence was read respecting reported applications being about to be made by certain parties for the institution of a Veterinary College or School in Dublin. The *Secretary* had forwarded to the said parties copies of the Charter and Bye-Laws of the College. The matter was then dropped.

The quarterly balance-sheet was read; it showed a balance in hand, after defraying the expenses of the quarter, of £488 4*s*. 8*d*. And on the motion of *Mr. Dickens*, seconded by *Mr. Silvester*, it was received and adopted.

The Registrar's report was read. It announced four deaths: the first was the senior member of the profession, Braey Clark, F.L.S.; he died at the advanced age of ninety. His diploma bears the early date of July 5th, 1794. His boast was that he was the first pupil who led a horse into the Veterinary College. His professional works are some of the most scientific extant. He was, until very recently, the owner of the skeleton of the celebrated Eclipse. Simon Mortlake, of Adelaide, Australia, May, 1837; James Cleveland, Army, May, 1853; and Christopher Sanderson, May, 1855.

Nine members have been admitted—T. Brook, Balsham, Cambridge; L. W. Walters, Cheekley, Stafford; W. Coles, Kilmerston, Somerset; R. Elkington, Brandon, Warwick; W. Dale, Stanmore; W. Bennett, Souldern, Oxon; B. Shorpen, Gresham, Norfolk; F. Barclay, Wickham Market, Suffolk; W. F. Chinn, Cardiff, Wales.

Notice of motion was given by *Professor Spooner*, "That the fee to be in future paid to the respective members of the Court of Examiners be raised from two to three guineas for each attendance."

E. N. Gabriel,
Secretary.

Veterinary Jurisprudence.

BEVERLEY COUNTY COURT.

MOUNSELL *v.* HARPER.

THIS was an action to recover the sum of £16 5*s*., for the breach of a warranty on the sale of a horse, it being alleged that the defendant, on selling the horse to the plaintiff, warranted it to be sound and free from vice, whereas it turned out to be a "wind-sucker."

Mr. Sylvester appeared for the plaintiff, who is the major and adjutant of the East York Militia; and Mr. Pettingell, of Hull, for the defendant, who is a farmer residing at Leven, near Beverley.

Mr. Sylvester, having stated the case, called Major Mounsell, who said that, on the 5th of July last, Mr. Harper brought a black mare to his house. He asked Mr. Harper what he would take for her, and Mr. Harper said £40; but he afterwards stated that £38 was the lowest sum he could take. He (witness) said he would give him £38, providing the mare was sound. He afterwards tried her on the Molescroft Road. Said to Harper he should like to have her examined. Harper said, what was the use of having her examined, and that the mare was all sound and free from vice. Harper, however, consented to have her examined, and went to Mr. Holmes, veterinary surgeon, who was not then at home. They went again on Saturday, the 7th, and the mare was examined in Mr. Holmes's yard. Harper said that the mare was perfectly sound and free from vice. He bought the horse on that representation, and Mr. Harper left his servant for about ten days to take charge of her. On the 16th of July, his own groom came, and two or three days after he had been in his service he complained to him (witness), and in consequence of that he went to Mr. Holmes. Mr. Holmes did not see anything the matter with the mare at first, and left the stable, but he came back again afterwards and did so. A few days after he got Mr. Holmes's written opinion. He saw Mr. Harper and told him he had sold him an unsound horse, but Mr. Harper only laughed at it, and refused to give him either his money back or a receipt. He (witness) told him he would seek justice in a court of law.

George Holmes stated that he was a veterinary surgeon, and examined a black mare on the 7th of July. Both plaintiff and defendant were present. He was with the mare half an hour. The certificate produced was the one which he gave. He examined her subsequently. He was informed something was the matter with her. He examined her the second time at the Barracks. He then found she was a "wind-sucker." "Wind-sucking" was first a vice, then formed a disease. It was perhaps one of the worst of diseases. Animals which were "wind-suckers" inhaled a quantity of air, and the stomach became weakened, and digestion was imperfectly carried on.

Other witnesses were then called to give corroborative evidence as to the unsoundness of the animal.

Mr. Pettingell addressed the jury for the defence. He then called Mr. Harper, of Leven, who stated that he recollected negociating with Major Mounsell about the mare. The plaintiff told him he wanted a steady horse; and he (witness) said he had a very useful mare. He saw the major again afterwards, and the major asked him the price of the mare, and he told him £38. The major tried her, and said he was very

much pleased with her. There was never a word said about warranting the mare free from vice. He left the mare with the major for two or three hours, on the 6th of July, that he might try her. The major asked him if he would sell the mare, and he said if he did, he would sell her on the same conditions as he bought her, and that was without a warranty. The major said he would take her, and he (witness) should hear no more about her, if a veterinary surgeon passed her. He had the animal brought over to be examined. He got Holmes's opinion, and after he had paid for her, the major got a piece of paper, and said, "I suppose you will warrant her." Witness said he would have no more to do with her, that he might either have the money or the mare, and the major said he would have the mare. The major borrowed his groom for ten days to take charge of her, and it was after the major's groom came home that he heard the complaint about the mare. He saw the mare after she was sold by auction. She was not now a "wind-sucker." He had never observed the least symptoms which Mr. Holmes then described.

Thomas Beckworth was called, and stated that the mare had not been a "wind-sucker." He had never noticed any signs of unsoundness or vice before this concern started. He had had more than thirty years' experience of horses.

Mark Henry Potts said, Mr. Harper stated, during the conversation with the plaintiff, that he would not give a warranty for the horse. Defendant said he might have the horse on trial, that he believed she was sound, but he would not warrant her.

John Foster, an elderly farrier, said he examined the mare at Mr. Harper's request, on the 7th of August. She was not a "wind-sucker." He watched the horse an hour, and there was not the slightest indication of unsoundness.

By his Honour—She might not exhibit the symptoms for half a day, and still be a "wind-sucker."

Mr. Sylvester then again addressed the jury, after which his Honour summed up, and the jury gave a verdict for defendant.—*Hull Times.*

ARMY APPOINTMENTS.

In the military orders from Woolwich, January 1st, it is directed that, "Veterinary Surgeons Evans and Meyrick are to hold themselves in readiness for service in China, but will do duty at their present stations until required to embark."

OBITUARY.

Died, September 21st, 1860, at Hong Kong, from fever, Veterinary Surgeon James Cleveland, of the Royal Artillery, aged 28. He had served in the Crimea, India, and China; was invalided home from the latter place, but died on his passage. His diploma bears date May 19th, 1853.

We have also been informed of the death of C. Sanderson, V.S. Royal Artillery, whose diploma bears date May 17th, 1855.

THE

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Communications and Cases.

ON SUGAR IN THE URINE OF THE HORSE.

It is an interesting fact, and one which has not received all the inquiry it merits, that very rarely is sugar found in the urine of the horse. Only an isolated instance or two have been placed on record, and these being considered exceptional cases, it is commonly said that this animal is not the subject of *diabetes mellitus*, or of that conditional state of the urine in which the saccharine principle exists in it, but only of the other variety of the disease, designated *diabetes insipidus*, *polyuria*, &c., in which the secretion is in greatly increased quantities, but retains its natural taste. Nevertheless, from such urine a substance has been obtained by M. Thenard resembling sugar in its being capable of furnishing alcohol by fermentation, and becoming changed into grape sugar by the action of dilute sulphuric acid on it: still, it does not possess a sweet taste. This statement, however, it appears, requires confirmation. According to Berzelius, "the urine in *diabetes insipidus*, though not sweet, is excessive in quantity and deranged as to composition; the formation of urea is suspended, and such always leaves, on evaporation, a brown residue, of the consistence of syrup, from which nothing crystallizes, and which is slightly acid."

It might have been anticipated, from the nature of the food of the horse, that he would have been far more frequently affected with the first-named form of this disease than with the latter; at least, such would have been the inference, reasoning *à priori*, since it is taught that farinaceous and other allied matters become converted into sugar during digestion; the change beginning in the mouth, in the

opinion of the older chemico-physiologists, through, firstly, the influence of the saliva on them, the ptyaline of which plays the part of a ferment, and induces a peculiar molecular transformation, which becomes perfected in the stomach. The modern theory of the formation of this glucose or grape sugar, however, is, that the liver is the great seat of the change effected on the non-nitrogenous or amylaceous food, when substances termed *hepatine* and *glucogen* are produced, which are readily changed into sugar by the action of the saliva and the blood on them. Urea, the characteristic principle in urine, is derived from the effete nitrogenized tissues.

It has been said that sugar cannot be detected in the blood of diabetic patients, and therefore its formation must be referred to other than the digestive process. Bouchardat, however, avers that it may be found if it is sought for shortly after meals, and he refers its formation to a change produced among the amylaceous elements of the food, in which all writers concur.

In the urine no difficulty presents itself—at least when the quantity is large—in the detection of sugar. It is only necessary to evaporate the suspected urine to the consistency of syrup and to leave it in a warm place for a little time, when crystals of this saccharine principle will soon be formed, which are to be washed in alcohol to abstract the colouring matter, and subsequently the granular mass may be purified by resolution and crystallization.

The late Dr. Golding Bird, writing on this subject, states that "the most extraordinary morbid change which urine suffers is that connected with the formation of sugar in the disease called *diabetes*. This urine does not easily putrify, and may be made to undergo vinous fermentation; it is usually of a pale colour and more or less sweet to the taste, and its specific gravity is commonly above the healthy standard; it is not, as is often supposed, destitute of, and even generally, I believe, not deficient in, urea. The presence of sugar in the urine is indicated by its tendency to ferment when in a warm place, especially on the addition of a little yeast. The influence of sugar upon certain salts of copper may also be made available as a test in these cases. A few drops of solution of sulphate of copper added to healthy urine occasion a slight blue cloud of *phosphate of copper*, and on adding a little potassa, *hydrated oxide of copper* is thrown down, which, if sugar be present, is redissolved by excess of potassa, forming a deep-blue solution; and on heating the solution, the copper falls in the state of red suboxide; if there be no sugar, the

black oxide only is formed." This test has been called Trommer's.

Lately, Brücke has asserted that sugar is always present in urine, and therefore it is a normal constituent of that secretion. With a view to test the correctness of this position, Dr. Bence Jones read a paper on this subject at a meeting of the *Chemical Society* a short time since, and his principal conclusions were as follow:

"Lehmann's process for detecting sugar in the urine by extracting the evaporated residue with absolute alcohol, and precipitating the sugar therefrom in the form of potash sugar, by means of alcoholic potash, cannot be employed when small quantities of sugar are present in large quantities of urine. The process of fermentation is stopped by the residue of the urine, by much urea, and still more decidedly by oxalate of urea. Half a grain of sugar in water can be detected by the alcohol produced, and may be estimated by the carbonic acid produced; but much larger quantities may be entirely overlooked in concentrated urine. In decolorising urine for examination in the polarising saccharometer some sugar is always lost. Animal charcoal removes sugar in proportion to the amount of charcoal used. This sugar may be recovered by washing with boiling water. Two thirds of the sugar in urine may be lost by Robiquet's method of decolorising with basic acetate of lead and ammonia. Pettenkofer's test for sugar by means of cholic or glycocholic acid and sulphuric acid is the most delicate known. Two thirds of a milligramme may be detected in a little distilled water, and the presence of a small amount of urinary colouring matter does not affect the reaction. Trommer's test with sulphate of copper and potash is capable of discovering $\frac{1}{20}$th of a per cent. of sugar in urine, but when very small quantities of sugar are in solution with muriate of ammonia or urea, the reduction of the oxide is not perceived. Brücke's alcohol process was not found to be satisfactory, but his lead process furnished excellent results. The urine is precipitated first with neutral acetate of lead, then with basic acetate of lead, and lastly with ammonia. The ammoniacal precipitate contains the sugar which is extracted by treating the precipitate with oxalic acid, or preferably by sulphuretted hydrogen. By Brücke's process one seventh of a grain of sugar added to 200 cubic centimètres of urine could be detected, and two thirds of all the sugar added could be recovered. Moreover, the sugar is obtained free from salts, so that it can be fermented, and free from colour, so that it may be examined by the saccharometer. The presence of sugar could be readily ascertained by this process in 1000 cubic centimètres of urine. The sugar separated by Brücke's process from 1000 cubic centimètres of the urine of a healthy man was estimated by the reduction test to vary from 1·4 to 2·2 grains, and in that of another man to vary from 2·3 to 3·0 grains. The sugar separated from 5000 cubic centimètres of the urine of one healthy man gave from seven to eight degrees of rotation in the saccharometer, and that of another healthy man from ten to eleven degrees. The sugar extracted from 14,000 cubic centimètres of healthy urine yielded by fermentation 1·8 grain of carbonic acid, together with a recognisable quantity of alcohol. These and other experiments fully confirmed Brücke's statement as to the habitual presence of sugar in healthy urine. Hence diabetes must be regarded as an exaggeration of a healthy state, and not as a distinct and peculiar condition of the system."

Of course the above statement applies to man. But have we been so observant as we might, and perhaps ought to

have been? And now that a knowledge of more delicate methods of detection has been arrived at, it may be as well to apply them. In all cases of suspected sugar in the urine of the horse that have fallen under our notice, we confess that we have been unable to detect it, although we have readily done so in diabetic urine obtained from the human subject; nor was Dr. Prout more successful than ourselves.

We incline to the opinion that this secretion, and its deposits, have not been studied by us as they deserve to be. Surely they must be indicative of certain alterations that are going on in the organism, designated disease, and a familiarity with them would enable us to diagnose with a greater degree of certainty than at times we are wont to do. It is true that the laws of chemistry largely obtain here, and by them we can alone explain many, if not most, of the changes that are taking place; it is by their aid also that we shall be directed to the means to be adopted to check the morbid action set up, and thus bring about the restoration of health. The science of chemistry is now recognised as an integral part of the education of the student of veterinary medicine, and we have, therefore, a right to expect from it no little gain, in its application to animal physiology and pathology. Hitherto it may be said that but little fruit has been yielded; the field, however, is one that will well repay the cultivator, and we shall patiently and confidently wait the result.

When it is borne in mind that the kidneys, in common with some other organs, are the depurators of the blood, eliminating from the system the soluble ashes of the effete tissues, and thus separating from the vital fluid such matters as are of no further use in the animal economy, or which, if retained, might act as a poison to the organism, it is no wonder that their peculiar secretion should often prove complex and variable in its nature, and the compounds obtained from it be somewhat numerous. Not that these always, and of necessity, pre-exist in the blood, for we know this is not the case; their elements only are found there, the combination of which takes place through the prevalence of established and well-known laws, either within or without the body.

"A knowledge," says Dr. Hassall, "of the characters and composition of the urine reveals to us the nature of most of those chemical, physiological, and pathological changes which are continually in progress in the system, and at a knowledge of which, but for the urine, it would have been difficult to have arrived."

Moreover, we must not leave altogether unnoticed the reciprocity that exists between the kidneys and the skin, an

interference with the function of the one often causing a corresponding alteration in that of the other. Each organ may, and doubtless has, its specific use in the animal frame, yet we know that some organs act vicariously: thus, the skin equalises the circulation by carrying off the superfluous fluid from the system, and so do the kidneys; each, in like manner, serves as a channel for the excretion of certain effete materials; nevertheless, the one cannot be said to wholly compensate for the other, the kidneys not being accepted as a means of regulating the temperature of the body nor serving as the seat of touch, these peculiarities belonging to the skin.

We think we have advanced enough to show the importance of a study of the urine, with its occasional constituents and its deposits, and likewise the relation which these bear to the alterations that are taking place in the frame, and it will afford us much gratification if the inquiry should be again taken up by those who are more able to do it justice than we are. We have entered into but few particulars, contenting ourselves with a general view of the subject, from knowing that it is one which has been recently brought prominently before the scientific section of the community. It would be strange if subsequent investigations should demonstrate, as Brücke appears to have done in reference to the urine of the human subject, that sugar is likewise a normal constituent of this secretion in the horse, and diabetes only "an exaggeration of a healthy state, and not a distinct and peculiar condition of the system." Yet stranger things than this have come to pass in the medical world, through the progress of science; the development of its truths having always been slow.

ON THERAPEUTICS.

By Professor Brown, M.R.C.V.S.,

Royal Agricultural College, Cirencester.

(*Continued from p.* 71.)

TONICS.

The common expression, "tonicity," bears an extended application. It refers to that peculiar property of muscular fibre which enables it to continue a steady contraction without exhaustion; and, in another sense, to that condition of

absolute health in which all the functions and structures are in exact relation to each other, and to the circumstances under which they are acting. Such a condition can only exist when there is an inherent force in the organism, fostered by the various vital stimuli, viz., light, heat, and the atmosphere, which are absolute necessaries of existence, in addition to the food or aliment which supplies the waste of the tissues.

Health, being dependent upon so many conditions, is rarely, or perhaps never, a persistent state. Such various causes of disease are found in the atmosphere which an animal may be compelled to inspire, in temperature, in the food, and in many of the circumstances of domestication, and even in nature, that defective tonicity of the system, or, in other words, disturbance of the healthy condition, is occasionally inevitable. No organic disease may occur, nor, probably, is any single function particularly affected, but the ordinary vivacity, the power of endurance, the capability of assimilating the food, are gone; the animal is dull, easily fatigued, and, in spite of the nutriment conveyed into the stomach, no improvement in the condition follows.

Before attempting to treat such a state of system, it will be obviously necessary to examine the causes which are generally easily found, either in the atmosphere, the animal's work, or in a present or previous disease. In the event of the debilitating influences being confined to the ordinary circumstances of the animal's management, the cure may probably be effected by a simple alteration of diet. A more liberal regime, more carefully regulated work, and better drainage or ventilation, may be followed by the return of health, presuming that a sufficient amount of vitality be left in the animal's organism. If a present disease occasion the defect, its cure will be, of course, a primary consideration.

The paramount object, in cases of defective tone, is to improve the digestive powers, without whose aid our efforts to improve the condition will be futile. We may convey nutriment into the stomach, but no particular advantage will follow unless it be properly assimilated. The absence of appetite may be taken as an indication that the digestive organs are not equal to the appropriation of food, which the animal instinctively refuses to take. Under such circumstances, that is to say, when the appetite fails, or the system is unable to assimilate the nutriment swallowed, "tonics" are indicated.

Agents distinguished by the property of increasing the "tone" of the organism are both mineral and vegetable in their origin. As mineral tonics, we may enumerate the salts of

some metals, as sulphates of copper, iron, and zinc; sesquicarbonate of iron, combinations of iodine with copper and iron, and salts of barium, with arsenic or some of its compounds. Vegetable tonics are quinine and its combinations, the various barks containing bitter principles, gentian, quassia, and other preparations of plants possessing the bitter extractive matter. The *modus operandi* of these drugs is not easy to define; we can only assert, as an ultimate fact, that mineral acids have the property of improving the tone and healthiness of the textures. Chemically, they exert a certain antiseptic power, and retard or prevent the decay of organic matters; probably this same property determines the extent of their tonic influence. The metallic base would seem, also, particularly in the case of iron salts, to produce some tonic effect. The admixture, however, of the acid and oxide of the metal, places the two in the most convenient state for introduction into the system, as the caustic properties of the acid are modified, and the insoluble base is usually rendered soluble. Vegetable tonics owe their tonic properties to their bitter and astringent principles. Their effects are less energetic than those of the mineral class, and they occasion much less disturbance in the organism; for these reasons they are valuable in many slight cases of debility, where the more powerful mineral agent would be unnecessary.

The tonic system of treatment may be pursued with two distinct intentions. First, it may be an object to improve the digestive and general secretive functions, that have been impaired from the various causes which we have mentioned, viz., the insufficient supply of food, or too much exertion, or the effects of an acute disease. Animals subjected to any debilitating influence for a long time suffer a diminution of vital energy, which a simple change of management, absolutely necessary as it is, may not suffice to restore. The functions are so far disordered that a purer atmosphere, better food, and properly proportioned exercise, are not enough to effect all that is required, principally on account of the derangement of the digestive system preventing the assimilation of nutriment, and so frustrating the beneficial effects that might otherwise be expected from the change. In such instances, a complete alteration of diet will sometimes produce marvellously satisfactory results. A complete change of food, however easy in human medicine, is sometimes impossible in the lower animals, whose dietary is so simple and limited. Medicinal aid will therefore be necessary to effect a permanent improvement. Tonics, properly applied, with the view to assist the dietetic treatment, not with the idea that

they can possibly restore healthy tone in defiance of natural laws, will be desirable. The agent selected will depend upon the amount of prostration. Dilute mineral acids, with a vegetable bitter, are very efficacious in restoring tone to the digestive system. During "anæmia" following inflammatory affections, the sesqui-carbonate of iron, with gentian and some cardiac stimulant, as ginger or pimenta, at once improves the digestive power and furnishes material for the colouring matter of the blood. Anæmia, associated with effusion, is appropriately treated by tonics and diuretics combined; thus taraxacum and carbonate of iron, or gentian; sulphate of copper and nitrate of potash, may be exhibited. The last formula, although not consistent with chemical laws, is not objectionable on that account, as no important modification of action will result from the formation of nitrate of copper and sulphate of potash. For "grease," or chronic œdema, we have found the compound to be very effective.

When prostration is very extreme, stimulants may be found necessary before tonics can be advantageously exhibited; in those instances mentioned during our discussion upon stimulants where the power of assimilation is entirely lost, tonics would share the fate of other matters, and either be expelled unchanged or remain to produce local irritation. The temporary excitement which will follow the employment of stimulants may tend to assist the appropriation of the other medicines, and hence in treating such extreme cases tonics will be judiciously combined with diffusible stimulants, which present themselves in the convenient forms of strong ale, out, or wines.

In extreme debility we have found vegetable tonics to be more readily appropriated than mineral; and small doses are, beyond question, more effective than large ones, which frequently defeat our intentions by causing immediate derangement, including loss of appetite, which is in itself a most serious consequence at a time when our treatment will owe its success to the improvement of the assimilative functions. As the tone of the system is gradually restored, the mineral agents may be added, if necessary, still keeping in mind the importance, under all circumstances, of so proportioning the dose that as little interference as possible may be occasioned to the organism. It cannot be too often insisted upon, that the grand object in exhibiting medicines is to introduce them into the system as quietly as may be; the fondness for energetic and immediate effects cannot but be deplored, as it leads us to estimate agents frequently according to the amount of disturbance which follows their exhibition.

The second object of tonic treatment is to support the system under the ravages of malignant diseases.

In typhus, glanders, farcy, blain, cancer, and necræmia, the blood becomes charged with effete materials, which, although excreted in large quantities from various surfaces, are not removed quickly enough to prevent their injurious effects upon the body of the animal suffering from any one of these diseases.

Therapeutic treatment should include the employment of agents capable of neutralizing the poisonous principles, in addition to the use of means calculated to improve the general tone; but, up to the present time, chemistry has failed to enlighten us as to the nature of those animal products. The science of medicine, therefore, can only offer an energetic opposition to their effects by endeavouring to preserve the vital energies until the morbid particles are all excreted.

In pursuance of this the only attainable object, those tonics possessing most powerful properties are preferred, and are commonly given in large doses, under the impression that no time can be afforded for the development of less active effects.

Such a line of argument would be unassailable were it demonstrable that large doses and powerful agents produced the effects sought more rapidly than small doses or milder medicines.

Experience, however, opposes this conclusion by facts of an opposite tendency.

Excessive doses we have already objected to on the ground of the disturbance they occasion, leading to loss of appetite; but small doses, even of the most potent agents, are digested without difficulty, and consequently without any derangement of the digestive functions.

In the treatment of the diseases we are considering, mineral and vegetable tonics are usually conjoined and given in the food, which is at all times the most consistent and convenient medium. Among the therapeutics available in these malignant diseases, the salts of copper, iron, barium, and arsenic, are very efficacious in combination with gentian and ginger.

Cantharides and capsicum have also proved beneficial, and, in all probability, the practitioner who employs the largest number of agents judiciously will be most successful. A change of medicine is often as important as a change of diet. Our own predilections are in favour of iodine compounds. The action of an antiseptic seems particularly necessary in diseases attended with so large a secretion of effete matter, and as

iodine resembles chlorine in its affinity for hydrogen, part of its beneficial action may be due to this property.

Reasoning *à priori*, we may conclude that a more extensive employment of what may be termed antiseptic tonics is desirable in the treatment of malignant affections; and combinations of iodine, chlorine, and bromine, are sufficiently numerous to enable the practitioner to test their efficacy in such diseases.

Dietetics, which form so important a part of a system of tonic treatment, we have not paused to discuss, as our remarks on the subject will form a concluding article, but we may be permitted to reiterate a caution already given, to the effect that tonic treatment, having for its object the support and improvement of the system, must be held subservient to the assimilative functions, which must never be permitted to suffer from the effects of the agents exhibited, as no real benefit can accrue from the action of a medicine one of whose effects is to disturb the digestive organs and diminish or perhaps destroy the appetite. So long as our patient eats his food with relish, our hopes survive in spite of the most unfavorable symptoms, but the appetite fairly gone, we confess our faith in medicine not to be sufficiently strong to lead us to entertain any very sanguine anticipations of a successful result.

(*To be continued.*)

SUPPOSED RUPTURE OF THE ŒSOPHAGUS.

By B. Cartledge, M.R.C.V.S., Sheffield.

In the *Veterinarian* for January, page 12 *et seq.*, is recorded by me a case of "Supposed Rupture of the Œsophagus," of the history of which I promised to forward a continuation.

I regret that I cannot add much to the account already given. The sac neither fills so rapidly nor so fully as it did, but that the opening out of the œsophagus into it is not obliterated is still demonstrated whenever the animal drinks; for a considerable amount of water then finds its way into it, and the swelling puts on a similar appearance to that previously described. The horse is now at daily work, which he performs satisfactorily, and without being distressed.

The first time he was put to plough, however, he stopped frequently during the early part of the day, and exhibited

marked signs of fatigue; and when removed and taken home, he vomited at the stable door. Since that time nothing unusual has been observed in him, and he is now performing general farm-work. There are no symptoms of pain on pressure, but there is a little evidence of impatience after drinking freely. The local condition of the throat appears to be very much the same as when I first saw the horse, although his general health has much improved, and the constitutional evidence of sympathy is almost gone. It appears to me very probable that the opening from the œsophagus into the sac will now be permanent. This opinion, I may add, is shared by Dr. Elam, Mr. Henry Jackson, and Mr. W. F. Favell, all of whom have seen the horse with me to-day.

Should any change worth recording take place, I will take care to inform you of it.

HYPERTROPHY OF THE HEART OF A HORSE.

By Clement Stephenson, M.R.C.V.S., Newcastle-upon-Tyne.

In the early part of December, 1860, I was requested by Mr. Eden, of Gateshead, to see a large gray cart-horse. On my arrival, I found him utterly unable to undergo the slightest exertion, and was informed that he had fallen twice while attempting to work during the morning. The pulse was about 100, and imperceptible at the submaxillary artery. There was likewise considerable effusion into the subcutaneous cellular tissue beneath the chest and abdomen, and also that of the legs.

In forming a diagnosis, I was induced to think that the heart was the seat of the disease, but could not satisfactorily make up my mind as to its nature, or the change that might have taken place in the organ.

The horse lingered on for a few days, when it was thought advisable to have him destroyed. I made a *post-mortem* examination, and found the heart enormously increased in size, and weighing as much as thirty-two pounds. I consider it to have been a case of true hypertrophy, every part of the organ being enlarged, without any other change of structure, either in the muscular or valvular portions of the organ. The anterior vena cava was much dilated, but the other large vessels, unfortunately, I did not examine.

I had known the horse for a long time, and he was always said to be a bad worker, which, I have no doubt, was referable to the state of his heart.

REMARKS ON THE ABOVE, BY ASSISTANT-PROFESSOR VARNELL.

Valuable as the above fact may be, it would, nevertheless, have been more so, and that in several points of view, had Mr. Stephenson kindly furnished us with a detailed account of the peculiarities of the morbid specimen, which would have rendered the record of the case both more perfect and more interesting.

It has its worth, nevertheless, since its importance suggests inquiry and exeites thought.

The above brief aecount, with that of another case—to me a very valuable one, although of a different nature—came into my hands embodied in a friendly letter, and I have reason to think it was not at first intended for the pages of the *Veterinarian;* but being aware that Mr. Stephenson is pleased to contribute to that Journal every information he possesses, I wrote to him for leave to publish it. This request was readily granted, with the privilege also of dealing with it as I thought proper. This reply induces me to offer a few remarks and suggestions on both cases.

Mr. Stephenson does not inform us if the heart was of its natural *deep-red colour*, or—as is sometimes the case—although increased in size, whether it was *pale* and *flabby*. The former appearanee is much more frequent, and, like a muscle that has been fully used, firm and springy to the feel. Neither are we told whether the *hypertrophous* state of the organ involved the walls of all the cavities, or if it was confined to a part of the heart only. Neither do we learn from the unfortunately brief description, whether the capaeity of the *auricles* or *ventricles* was diminished or increased.

Simple hypertrophy seems to be the most common form of this affection, in which the relative capacities of the cavities to each other is retained, although their walls may be very much thickened. Such, I should judge, was the case in this instanee; at any rate, I am induced to think so because, had it been otherwise, it would have been noticed by Mr. Stephenson, and doubtlessly he would have mentioned the circumstance. The uniformity of the increased size of the organ, and the unaltered capacity of the ventricles

and auricles, induced my friend to think it necessary to allude only to its increased magnitude.

The profession will feel indebted to Mr. Stephenson for the history and some of the most prominent symptoms observed by him in this case. The fact that the horse had been for a long time "a bad worker;" his inability, for a short period before his death, to do any work at all; his want of power to rise when in a recumbent position; his increased pulse, but imperceptible at the submaxillary artery, and the extensive effusion alluded to, are all symptoms worth taking notice of; for we must acknowledge that veterinary literature in this country is not rich in such cases, and we need all the information we can get on this as well as other diseases of the heart.

Some few of the readers of the *Veterinarian* may not be fully aware of the usual definition of *hypertrophy*. I may, therefore, be excused for appending a few remarks on the subject, simplifying them as much as possible.

Hypertrophy of the heart may be *true* or *false*. When true, it is thought that the increase in size depends upon excessive nutrition and development of the muscular tissue only of the organ. By *false hypertrophy* is meant an increase in the volume of the heart by the deposition of a new and dissimilar structure in the substance of the organ, at the expense, or *atrophy*, of the original tissue, which formed almost the entire substance of its walls, and upon which this action depends. Such is a very brief description of hypertrophy.

The chief value of as much information as we can obtain on this subject is to assist us in forming a correct diagnosis, thereby enabling us to advise the owner accordingly. Should we feel satisfied that the heart is hypertrophied, our *prognosis* must always be unfavorable, for we are forced to the conclusion that neither medicine nor any other means can possibly effect a cure. Therefore, a horse so affected, although he may be able to do some work in the early stages of the disease, or when the heart has not become much increased in magnitude, nevertheless, in extreme cases, like the one in question, it would be wiser that the animal be destroyed, as no credit will accrue to the practitioner, nor any benefit to the proprietor, by his being kept alive.

How is hypertrophy of the heart produced? It is thought that some degree of obstruction to the circulation, existing in parts remote from the organ itself, as in the lungs, chylopoietic viscera, or in the capillary system generally, is the principal cause of the affection. We can conceive that increased muscular action in the heart, induced for the pur-

pose of overcoming a partial obstruction in any portion of the blood's course, would be as likely to produce excessive development as in the muscle of a limb, or any other part of the frame, from its becoming much used; and, therefore, this view of its origin is perfectly feasible.

HYDROTHORAX, THE RESULT OF PLEURISY, TREATED SUCCESSFULLY.

By the Same.

On the 28th of September, 1860, I was requested by Major Read, of Newbiggin Hall, to see a bay hunter, which I was informed had been ill for two days. On my arrival I found he was suffering from *pleurisy*.

The usual symptoms of this disease continued with but little variation for six days, when I found that effusion had taken place into the right pleural sac, and, as is usual with such results, the acute symptoms partially subsided. Feeling confident of the presence of fluid in the chest, I performed the operation of *paracentesis*, and was enabled thereby to draw off as much as eight quarts of semi-opaque serum, which considerably relieved the animal's breathing.

I always consider it advisable in such cases to draw off as much of the effused fluid as I can, and, while doing so, I endeavour as much as possible to prevent the ingress of air. These two points I think important in the performance of this operation.

My treatment consisted in keeping the horse under the influence of mercury, guarding its action by opium. I also subsequently gave tonic agents.

The recovery was most satisfactory, for in about a month the major sold the horse, and in a short time afterwards he was hunted, when, with the exception of his being a slight whistler, he did his work well.

I consider mercury to be a very valuable agent in inflammation of the respiratory organs. Of course there are cases in which its use is contra-indicated, and its influence always requires to be guarded by other agents. I use it often, and have observed very great benefit to result from its administration.

REMARKS BY ASSISTANT-PROFESSOR VARNELL.

The above case is a very interesting one, and the recovery of the horse may be said to be in a great measure due to the correctness of the diagnosis, coupled with the energy evinced by Mr. Stephenson in his medical treatment of the animal, and the other means resorted to by him. I think, however, that this case too would have been more instructive if he had favoured us with a little more information—I am sure he will pardon me for this freedom—such, for instance, as the age of the horse, his condition, and the supposed cause which gave rise to the disease, for these, as well as other circumstances, must always be taken into consideration in forming a *prognosis*.

Pleurisy existing on one side only, arising from exposure to cold, in a young, healthy horse, is much more likely to yield to treatment than a case complicated with other diseases, such, for example, as influenza, especially should it have assumed a typhoid form. The former, if taken in time, generally succumbs to rigid antiphlogistic treatment, while the latter requires the opposite course of procedure; and in a great many instances we lose our patients, even although everything be done that science can suggest.

Mr. Stephenson seems to attach great importance to the use of mercury in this affection, and I think very properly so, it being guarded, as he says, by opium. But he does not say anything about bleeding, which, in the treatment of this disease, is the sheet-anchor of many practitioners, both human and veterinary. Perhaps this case was not of that sthenic nature as, in his opinion, demanded the withdrawal of blood, or possibly he may not see the necessity of bleeding under any circumstances. For my own part, although I have a great aversion to bloodletting, and believe that immense losses have been sustained by the practice, nevertheless there are cases in which I am fully persuaded that a timely withdrawal of blood tends very much to facilitate a cure. Pleurisy I consider one of them. Bleeding is borne better in inflammation of serous membranes than in any other tissues of the body, and is often found more beneficial, provided there is a tolerance in the animal to lose blood. But if pleurisy is, as before said, complicated with disease of an *asthenic* nature, such, for example, as typhoid influenza, in which there is always more or less prostration of the vital powers, then, in my opinion, venesection must not even be thought of, except to forbid it being resorted to.

I think we ought not wholly to discard the idea of blood-letting in such diseases as the above, nor in some others of a kindred nature.

With regard to medicines, Mr. Stephenson, as I have before stated, attaches great importance to the use of mercury, but he does not say in what doses he gave it, or would recommend it to be given, nor how often, and whether any particular symptoms would cause him to desist from its further use. He thinks, however,—at least I draw this inference,—that it is proper to keep the animal under its influence for a time. I quite agree with him in the value of this agent in such cases, but should consider it necessary, when pushed to a certain extent, which would be indicated by the state of the mouth, that its use may be wholly or partially discontinued, and then perhaps a saline draught, with tartar emetic or digitalis, in small doses, used in its stead.

Had counter-irritation been needed, I have no doubt Mr. Stephenson would have had recourse to it. Perhaps he had, but as he does not allude to it, we may infer that his case was a mild one, and did not require such an adjuvant. I cannot but think that irritants to some part of the chest are often of great value. But the question may be asked, in what stage of the disease ought they to be used?

With regard to the operation of *paracentesis* in cases of hydrothorax, great *éclat* is often gained by the veterinary surgeon's performance of this simple operation, should he be fortunate enough to have his patient recover, whether this be due to the operation, to the treatment otherwise, or to nature herself; or should he, in a less favorable case, have performed the operation, and drawn off a *very large quantity* of fluid, and the horse die—as I believe he commonly will, for I have heard of only one recovery under such circumstances—the practitioner will then be considered to have done all that possibly could have been done.

It is astonishing how early in this affection an effusion of serum takes place into one or both the pleural sacs. The dry condition of the inner surface of the pleura, consequent upon the hyperæmic condition of the sub-pleural blood-vessels, does not always last long, and I verily believe, in many cases which recover, that a considerable effusion had existed, and the fluid become reabsorbed, without suspicion being entertained of such having been the case. And not seeing any reason why it should not be so, I have doubted very much the value of the operation. I am, therefore, inclined to think that many of those cases which recover after "tapping," would have lived if the operation had not been performed at

all; and those that die would have died whether it was performed or not. But it may be asked, supposing we are confident of the existence of a few quarts of water in the chest, is it not better to remove it by the aid of the trochar than to trust to its becoming absorbed? Doubtless it is the readiest mode of getting rid of it, and, if no unfavorable circumstances can be imagined to result from the operation, I can raise no other objection to its being done than the supposition that it might be absorbed with equal advantage to the well doing of our patient; the operation, consequently, would be unnecessary.

With regard to the preventing of the admission of air into the chest during the operation, I have seen it occur through the canula at the time when most of the fluid had been withdrawn, but I have not as yet had any reason to attach so much importance to this circumstance as many persons do; nevertheless, I should avoid its taking place, if possible, for I can understand that the admission of air, in any quantity, into the chest, might change the character of the effusion from simple serum to a sero-purulent fluid, and thus establish a case of empyema.

I know of no diseases the morbid anatomy of which requires more thorough investigation than those affecting the organs of the chest. In veterinary jurisprudence it is very important, for the discrepancies of opinion which exist with respect to the length of time the disease may have existed, as judged by the character of the effused matter, and the nature of the false bands of adhesion, are often so great as to lead to the conclusion that the assertions made must arise from ignorance, not to say anything worse.

It is astonishing how soon well organized, tough bands are formed in cases of simple pleurisy, especially in young, vigorous horses. In debilitated animals, or when the disease is complicated with others of an æsthenic character, in which the vital powers are much depressed, we rarely get tough, firm adhesions; but those that do exist are soft, friable, and easily torn, even though considerable time may have elapsed since the effusion took place. Well-authenticated data on this subject are highly desirable; we therefore cannot but feel indebted to Mr. Stephenson for supplying us with these interesting cases, for, although briefly given by him, they have awakened thought, and added to that on which true medical knowledge can alone be built, namely, facts; and we hope they will be yet instrumental for good in calling forth observations from others.

AN IMPROVED HORSE-SHOE.

By H. Withers, M.R.C.V.S., V.S. Royal Artillery, Aldershot.

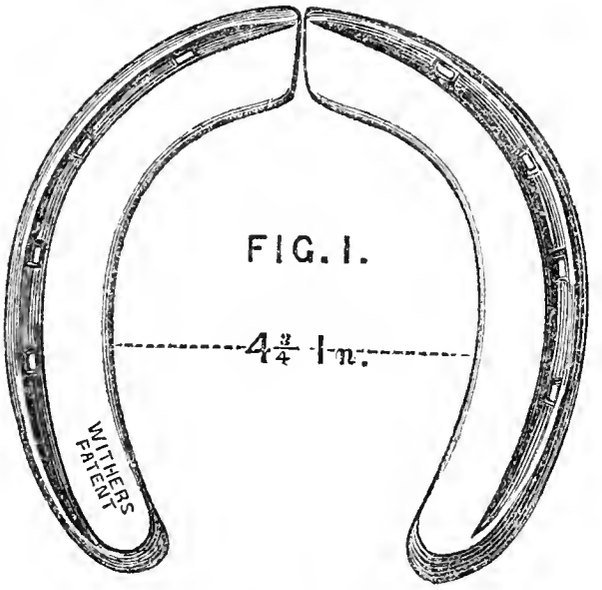
Gentlemen,—With this I have forwarded to you plates of a new kind of shoe that I have patented, and which I think will be found to possess great advantages over the one now in use. The accompanying diagrams will show that it is very simple in construction, being nothing more than a shoe very similar to the ordinary one, cut in half at the toe, so that there is, in fact, a pair of shoes on each foot. The corner of the inner circle, at the divided part, is slightly rounded off, and each half is furnished with a clip of the ordinary size at the toe, and another, a smaller one, at the side, the latter assisting very much in retaining the shoe in its place during the operation of nailing it to the foot. The clip at the toe, however, I have found quite sufficient to keep the shoe on the foot, even in riding over a heavy country. The fullering is only to be carried to within an inch, or an inch and a quarter, of the toe; it thus renders that part of the shoe much stronger than if it were continued all round.

The advantage of this "divided shoe" is, that it leaves the foot more as it would be in a state of nature. Instead of the unyielding three-quarter circle of iron now used, cramping and confining it, the division of the shoe at the toe allows it free play and lateral expansion, and the descent of the sole, be that to ever so infinitesimal an extent, is not interfered with. Concussion is also broken, and the result—the more elastic step—is soon appreciated by the rider.

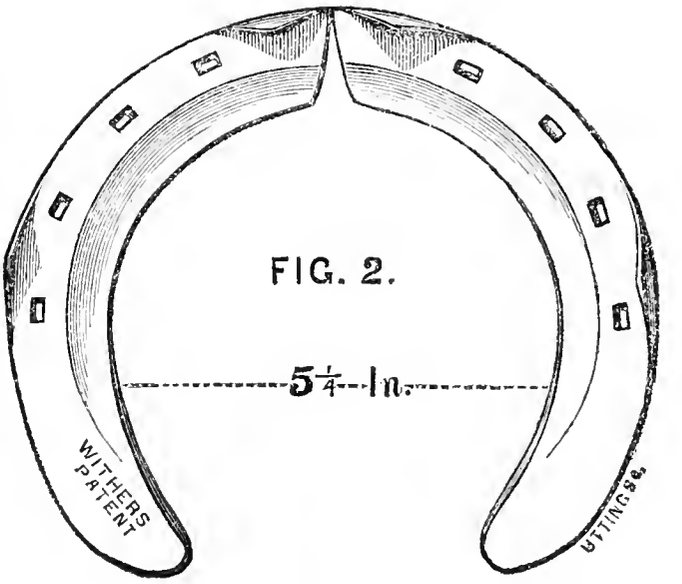
I have been using these shoes for some time upon my own hunters and harness-horses, with perfect success; and I was very much struck with the improved going, after two or three shoeings only, of a mare I used as a charger. I have also tried them upon several officers' horses, and horse-artillery troopers, and the feet of some of the latter which were small and contracted have improved very much in appearance.

I consider these shoes to be particularly adapted for troop horses, as the ordinary size, viz., $5\frac{1}{2}$ inches, can easily be put upon feet from $5\frac{1}{4}$ to 6 inches in size, with this advantage, that they can be used as hind shoes on service.

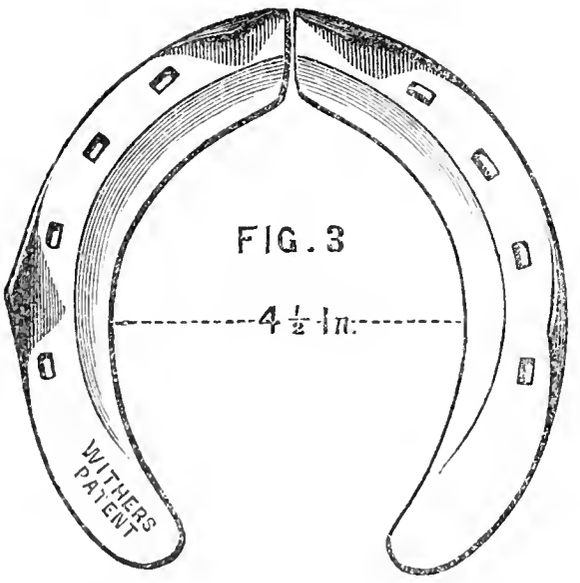
The workman will find it the easiest way to fit the shoe



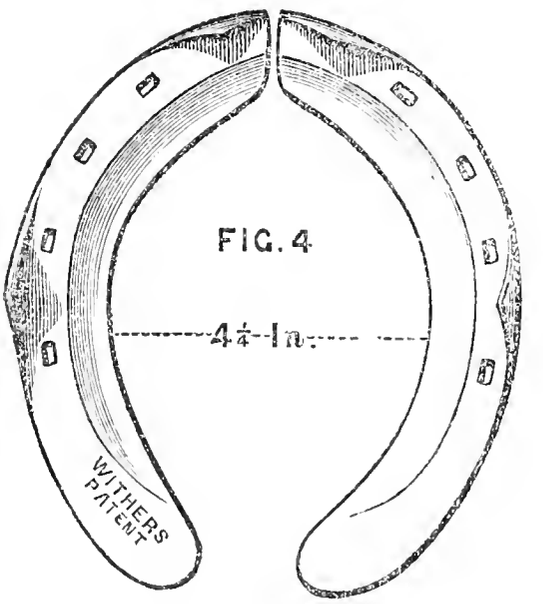
Ground surface of the Shoe.



Same Shoe, put on a foot $5\frac{1}{4}$ size.



Same Shoe, put on a foot $4\frac{1}{2}$ inches.



Same Shoe, put on a hind foot.

whole to the foot, and turn up the clips, before making the division.

Apologising for occupying so much of your valuable space,

Believe me,

Gentlemen,

Your obedient servant,

H. WITHERS, V.S.R.A.

To the Editors of 'The Veterinarian.'

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. WATSON, M.R.C.V.S., Rugby.

(*Continued from p.* 19.)

VICIA (Vetch).—Under this head we have a large tribe of plants, belonging to the natural order *Leguminosa*. They may always be recognised by having stamens diadelphous (nine in one parcel and one separate), and a filiform style, with a tuft of hair beneath the stigma. Eight or ten species grow wild in this country, and a great number have been introduced from abroad. Many are cultivated for the large amount of valuable forage they produce, some for the food which their seeds yield to human beings, especially in France and Canada, and others for their great floral beauty.

The following description of the variety more generally cultivated in this county, as food for our domesticated animals, will give a brief insight to the characters of the whole of this genus:

Vicia sativa—(common vetch). Flowers nearly sessile, mostly in pairs. Leaflets elliptic-oblong; lower ones abrupt. Stipules with a blackish depression beneath. Seeds orbicular, smooth (Lindley). This very familiar plant is found growing wild on the road-sides and hedge-rows of many parts of England. In its wild state it is of a somewhat dwarfish habit; but by cultivation it assumes a much larger and more luxuriant growth, its climbing stems attaining a height of from two to three feet, having purple, sessile flowers, which appear in the latter end of May or beginning of June.

There are two varieties of it, called the winter and summer tare. The former, being sown in the autumn, and withstanding the severities of winter, is generally consumed in the spring. The latter, being unable to resist the winter, is

sown in the spring and consumed in the autumn. "The winter tare is usually smaller in size, and has smoother and more cylindrical pods, and also presents a nearer resemblance to the normal wild plant than the summer tare; yet if repeatedly sown in the spring, it rises into comparative luxuriance, and loses most, if not all, of its hardiness, and ceases to be suitable for autumnal sowing."

An important fact, showing the influence of cultivation, and one which should not be overlooked in these days of forcing with artificial stimulating manures.

According to Sinclair, the winter tare contains more nutriment than the summer variety. He states, "when cut at the time of flowering, upwards of one sixteenth of its entire weight consisted of nutritive principles; between one fifth and one sixth consisted of woody or unassimilable matter, and the rest was water."

The vetch is largely cultivated in most parts of this country, but it thrives best on moderately dry and gravelly loams. It is one of our most valuable forage plants, not only on account of the large amount of green food which it affords, but also by its cultivation permitting a second crop (probably root) during the same year. It is sometimes made into hay, but requires much attention in doing so, and it also sustains considerable loss. Like all other green food, care should be taken not to allow animals to partake too freely of it, especially when it is wet from dew or rain, or the result may be flatulent colic, or tympanitis, with a rapidly fatal result.

Ulex Europæus (common Whin, or Gorse).—Calyx two-lipped; stamens ten, monadelphous; legume oblong, turgid, a little longer than the calyx; leaves spiny, sharp-pointed.

This well-known plant is found growing upon heaths and waste places in most parts of this country. Indeed, it grows upon almost every description of soil, attains a height of from four to eight feet, and has bright-yellow flowers, which appear towards the middle of February.

It is a very hardy plant, and in times of scarcity, especially during the winter months, would afford a considerable amount of nutritive food, which is much relished by all kinds of cattle. It requires to be well bruised or crushed, to destroy the spines, so as to prevent them from injuring the mouth.

There is something very interesting and beautiful in the means by which the gorse propagates itself by seed, which I think worthy of a passing remark.

It grows so densely, and speads itself so closely upon the

ground, and carries its flowers at so small an elevation, that if it dropped its seeds directly upon its own site it would suffocate them, and eventually they would die. Instead of this, it gradually dries its pods to ripeness, holds them tight till they become mature, and then, in warm, sunny weather, opens them with an explosion, and jerks their contents to a considerable distance.

Having thus given a short description of the principal plants which are consumed as food, either in a green or dried condition, by our domesticated animals, I shall, for a time, leave the natural order Leguminosa, and proceed, in my next communication, to make some remarks upon the plants whose stems and roots (such as the turnip, &c.) are cultivated as food for animals.

(*To be continued.*)

AN ACCUMULATION OF EXTRANEOUS SUBSTANCES IN THE RECTUM OF A HORSE.

By Walter Lewis, M.R.C.V.S., Crewe.

I. History.

On the 3d of April, a valuable cart-mare, nine years old, was purchased of a publican in Manchester, by Mr. S—, a farmer residing near Northwich. At that time, and also on the 6th of the same month, the day when she was transferred to her new owner, she was apparently in good health; and up to the 14th she presented to the notice of her attendants no abnormal symptoms whatever.

On the morning of the day last named, she was engaged in drawing a loaded cart along a somewhat steep and heavy road, and while so employed, about half-past 9 o'clock, she suddenly fell lame of the near hind leg, which she endeavoured to keep resting on the toe. She was at once taken home, and placed in her stall, when she immediately laid down, appeared unwell, and became very uneasy. Her owner, apprehending an attack of colic, procured the attendance of a neighbouring veterinary practitioner, who saw her soon after mid-day. She was then lying down, still very restless, and full of pain; the breathing was quick, and her pulse about 80; she perspired profusely between the thighs, and occasionally ate portions of dirty litter. On attempting

to make her rise, she raised herself on her fore extremities only, and all efforts to cause her to assume the standing posture were ineffectual. The practitioner in attendance then bled her, administered an oleaginous draught, prescribed febrifuge and anodyne medicines, and ordered the injection of enemata, and the application of a sinapism to the loins.

On the following day, my attendance having been requested, I visited her, and found the restlessness and other symptoms indicative of pain unmitigated and almost incessant. She seemed to lie with most ease on her left side; manifested pain on the application of pressure to the right flank, to which part she frequently turned her head, and was still powerless to rise. The pulse was 82, the breathing quick, the mouth hot and dry, the fæces pultaceous, and I was informed that she had urinated freely. Unable, at first, to deduce from my patient's symptoms any satisfactory conclusions with regard to the cause of her illness, I proceeded to examine her more carefully, and in the course of my investigation, introduced my arm into the rectum. I immediately felt therein what, from their size and hardness, I thought might possibly be beans which had escaped undergoing the masticatory and digestive processes; but on emptying the bowel of its contents, I discovered, intermixed with the fæces, which were thickly coated with mucus, *a considerable number of small stones,* of a description common to the beds of watercourses; *two or three curved pieces of brass wire,* apparently segments of a large ring; *several rusty iron nails, a brass button, a tinned tack, a pin,* and *various shapeless scraps of iron,* which were much corroded. In the fæces which, during the same day, had been previously and were also subsequently voided, I found a small quantity of pebbles; but in addition to these, no other similar substances were observed in the evacuations. I ordered the administration of an opiate draught, a liberal allowance of demulcents, and frequent injection of enemata.

The mare continued extremely ill until about 9 o'clock the following morning, when a little amelioration of the symptoms began to be visible. On my arrival, I was informed that, after my departure on the previous day, her respiration had at times been much accelerated, that her breath had issued from her nostrils like steam, and that short twitchings of the head and fore extremities had occasionally occurred. I found her able, but with some difficulty, to stand for about five minutes at a time. The pulse and breathing were improved, and she seemed more free from pain; her bowels were sufficiently open, and she staled freely. I gave her an

oleaginous draught, and, as she was somewhat exhausted, ordered repeated doses of Spirit. Æther. Nit., cum Spirit. Ammon. Arom. The administration of demulcents was also continued.

On the 17th, the mare was considerably improved; the pulse and breathing had become more natural; she was able to stand for fifteen minutes at a time; was desirous of food, and inclined to drink freely; the alvine and urinary discharges were healthy; her body and extremities warm; and she showed a disposition to be playful. But the lameness in the near hind leg still remained; and I may here mention, that, after a careful examination of the affected limb, I was unable to detect anything in it likely to produce this lameness. When made to rise, an act which she now could accomplish readily enough, she would be easy for the first few minutes afterwards, but would soon become very restless, shifting about, cringing on her legs, and would then resume the recumbent posture, in a remarkably slow and cautious manner.

From this period she amended so rapidly that at the expiration of three days her health appeared to be perfectly restored, and in a short time she became able to do a hard day's work. Her lameness, however, did not entirely disappear until nearly another week had elapsed.

II. Remarks.

I was unable to ascertain how or when the mare obtained the extraneous substances discovered in the rectum. It was suggested to me that they had been maliciously placed there, or were administered in boluses by the mouth. But the circumstances, when associated, under which they were found, rendered it evident that they had not been introduced by the former mode; and although there is a possibility of the latter having been resorted to, I did not consider it at all probable. My own opinion was that the mare had voluntarily picked them up and swallowed them with her provender, or otherwise. While in the possession of Mr. S—, her food consisted of crushed oats, but when at Manchester, she had both English and foreign beans; and it is not unlikely that she obtained the pebbles with them, for beans—especially foreign ones—sometimes contain a considerable quantity of such substances. At the same time it is well known that when the opportunity is afforded them, both horses and cattle will occasionally amuse themselves by chewing and swallowing stones, pieces of iron, leather, articles of dress &c., and my patient may have been guilty of similar malpractices.

For various reasons—and of these not the least important are jurisprudential ones—it would be interesting to know the length of time the substances in question had been present in the intestinal canal. At the commencement of the mare's illness she had been eight days in her present owner's possession, and he very positively assured me that she could not possibly have obtained them during that period. The tinned tack and brass wire were clean and bright, but some of the pieces of iron were much corroded. As, however, it cannot be proved that the corrosion took place in the digestive tube, their appearance affords no clue to the length of time they had been there. The evidence, therefore, is by no means incompatible with the probability that they were present, and had been accumulating in the alimentary canal, some time antecedent to the 6th of April. And if so, how long?

That the intense irritation they excited was the cause of the mare's illness, and the attendant lameness and paralysis, I see no reason to doubt. The large intestines being rendered extremely sensitive, would of course be further irritated by motion, and hence would arise in some measure lameness or abnormal gait. The apparent paralysis might be real or not. If the latter, the mare's obstinate refusal to rise would proceed from fear of the acute pain which the attempt to do so would produce; but if the former, which I believe it was, it must be attributed to reflex nervous influence.

[We hardly like to hazard an opinion on this strange case communicated by Mr. Lewis, as we have not seen any of the "extraneous substances." But they appear to us to have been such as frequently are found accumulated in the larger intestines of horses affected with bulimia; and which becoming dislodged from the sacculi formed by them, had been passed onwards for expulsion, (since it is not uncommon for large masses to be thus voided). Further, that the suspected pebble-stones were really small calculous concretions, formed by the phosphates surrounding metallic and other bodies, similar to those described by Mr. Lewis, so as to render them less injurious. It is astonishing what strange matters, and how large a quantity of them, a voracious feeder will sometimes swallow.

Again and again have we after death taken from the cæcum just such substances as those stated by him to have been removed from the rectum.]

Facts and Observations.

WHAT'S THE USE OF EYES?—ADULTERATION OF OATS, &c.

Mr. W. L. Scott, in a paper "*On Food, its Adulterations, and Methods of Detecting them*," lately read by him before the Society of Arts, says, "Our poor horses frequently get some five and twenty per cent. of brewers' or distillers' grains served out to them in their reputed measure of oats." Can such an obvious adulteration as this ever be attempted, and remain undetected by the purchasers for a single moment? For, of course, the fraud is always on the part of the seller of the oats, no one else being benefited by it.

With a far greater show of reason, Mr. Scott asserts that "the rape-cake given to horses and cows frequently contains a quantity of refuse mustard-seed, which often proves dangerous, and sometimes fatal, to the former animal." It does so by the stomach's action on it giving rise to the production of the irritating essential oil of mustard. A similar objection holds good in reference to the use of the cake remaining after the pressure of castor-oil seeds, and it is more especially so with croton-cake, tons upon tons of which have been buried, or otherwise disposed of; the drastic, purgative action of the oil retained in the cake being well known.

The cake left after the expression of the fixed oil from bitter almonds is likewise known to yield on distillation, a highly poisonous oil, containing hydrocyanic acid; and as in the stomach there exist analogous conditions, it may be that a like change is effected in that organ by the mutual reaction that obtains between the amygdalin, emulsin, and water. The essential oil is also readily produced by mastication.

Our readers will remember Professor Voelcker's report on cotton-cake, given at pp. 201 and 322, vol. xxxii, and also what strange matters were found by him in a mixture sold as cattle-food (vol. xxxiii, p. 345). Yet do these residua often contain all the necessary flesh-forming and respiratory principles, but the mixture of others militates against their employment as food.

Not very long since, we were consulted respecting some cheap rice, which had, it was suspected, caused the death of several pigs, and we found mingled with it a notable quantity of nitrate of potash, the origin of which it was not difficult to assign. These facts speak for themselves, and should operate as a caution to the purchasers of cheap matters as food for animals, the policy of which is always more than questionable.

A NEW SOURCE OF IRON.

The iron-sand which covers many miles of the country in the neighbourhood of New Plymouth, New Zealand, has been ascertained to consist of the peroxide of iron, with 12 per cent. of titanium—a rare combination. The finest cast-steel is made directly from this titaniferous iron-ore; and sundry cutting instruments, such as razor-blades, knives, &c., having been formed from it, they have been found to possess much hardness, a keen edge, and not to tarnish quickly.

There can be no questioning the value of this sand to the colonists, whilst the supply is said to be almost inexhaustible.

CONVERSION OF CAST-IRON INTO PLUMBAGO.

At a recent meeting of the Royal Society, Professor Crace-Calvert announced an interesting chemical discovery—that cast-iron is convertible into plumbago. The professor soaks cubes of cast-iron in weak acid—vinegar being the most suitable—until the iron is dissolved out, and the carbon remains. By this process the cubes lose in weight, but not in dimensions, and retain their form unaltered; but the quality is changed, and it is as easy to draw lines with one of them as with a lump of plumbago. Artists and others who have been uneasy as to failure in the supply of lead for pencils, may now dismiss their apprehensions; for, while cast-iron is to be had, the desired material will be available. Strictly speaking, it is not carbon, but a cyanide of carbon, which remains after the solution of the iron.

ANALYSIS OF THE AIR.

Dr. Frankland has analysed air from Mont Blanc, at an altitude of 11,000 feet, and finds it to consist of—

Nitrogen	79·056
Oxygen	20·881
Carbonic acid	·063
	100·000

Dr. Miller examined air collected during a balloon-ascent at a height of 18,000 feet, and found 20·88 per cent. of oxygen; whilst a sample of air collected at the same time near the

surface of the earth furnished 20·92 per cent. of oxygen; it would seem, therefore, that in the higher regions of the atmosphere there is a slight diminution in the amount of oxygen, and a slight increase in the proportion of carbonic acid.

PROTEINE IN THE POTATO.

Crystals of proteine have been found by Cohn in the cortical cellules lying under the corky envelope of the potato. These cellules contained more than one cubical crystal each, which was generally attached to the primordial utricle. The presence of this principle, although small in quantity, necessarily increases the nutritive property of this tuber.

ALCOHOLIC FERMENTATION.

M. Pasteur, who has made this his special study for some years, announces that the generally received opinion that *cane* sugar ($C_{12}H_{11}O_{11}$), after being modified into *grape* sugar ($C_{12}H_{12}O_{12}$), when mixed with yeast, ferments, and splits up into alcohol and carbonic acid, the sum of the weights of which represent very nearly the weight of the sugar, is only a rough approximation to the truth; and that amongst the products of the fermentation are *glycerine, succinic acid, cellulose,* and some other undetermined matters. 100 grammes of sugar-candy, fermented with 1·198 gramme of dry yeast, gave after fermentation—

Glycerine	3·640
Succinic acid	0·673
Cellulose, &c.	1·633
	5·946

The elements of these bodies being furnished solely by the sugar. M. Pasteur is still engaged in the study of the transformations which sugar undergoes inconsistent with the theoretical equation, $C_{12}H_{12}O_{12} = 4CO_2 + 2(C_4H_6O_2)$.

ALPACAS IN AUSTRALIA.

A correspondent of the *Sydney Morning Herald* has computed the probable increase during fifty years (taking all reasonable contingencies into account) of their stock of alpacas, now 50 males and 200 females, at 9,760,000; which yielding 7 lbs. wool each, will give the astonishing amount of 68,320,000 lbs., at 2s. per lb., equal to £6,830,000.

DISEASE AMONG CATTLE AND SHEEP IN BELGIUM.

The Belgium correspondent of the *Daily Telegraph* states that, "As large exports of cattle from this country to England are constantly taking place, it is right that the British public should be made aware that the same kind of epidemic which committed such ravages here among cattle and sheep in 1825 has again made its appearance in the neighbourhood of Alost, and that both oxen and sheep have already fallen victims to it. The authorities in London should take some precautionary measures to prevent diseased animals being introduced from here, which is all the more necessary as it has been ascertained that the malady in question renders the meat very prejudicial to the health of those who may partake of it."

THE HIPPOPOTAMUS WITH THE TOOTH-ACHE.

A letter from A. D. Bartlett to Mr. Buckland describes an interesting but dangerous operation upon a hippopotamus, such as probably was never before performed. The writer says: "I had intended to write to you before I left town, but could not find time. You will be glad to know that I have succeeded in performing the largest, if not the greatest, dental operation on record. Our male hippopotamus has been, as you know, suffering from the fractured tooth, and, fearing that the consequences might be serious, I have had a strong oak fence fixed between his pond and the iron railings, and I then determined to remove the broken tooth; this I accomplished on the morning of Wednesday last, but not without a fearful struggle. I had prepared a powerful pair of forceps, more than two feet long; with these I grasped his fractured incisor, thinking, with a firm and determined twist, to gain possession of that fine piece of ivory. This, however, was not quite so easily done, for the brute, amazed at my impudence, rushed back, tearing the instrument from my hands, and, looking as wild as a hippopotamus can look, charged at me just as I had recovered my forceps. I made another attempt, and this time held on long enough to cause the loose tooth to shift its position, but was again obliged to relinquish my hold. I had, however, no occasion to say, 'Open your mouth,' for this he did to the fullest extent; I therefore had no difficulty in again seizing the coveted morsel, and this time drew it from his monstrous jaws. One of the most remarkable things appeared to me to be the enormous force of the air when blown from the dilated nostrils of this great beast while enraged. It came into my face with a force that almost startled me."

THE VETERINARIAN, MARCH 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —Cicero.

INSPECTORSHIP OF CATTLE AT THE METROPOLITAN MARKET.—SALE OF UNWHOLESOME MEAT.

In our last number we adverted to the *public* recognition of our profession, exulting thereat. But is this at all surprising? Is it not, rather, more surprising that hitherto it has not taken place to the extent it ought? And what has been the cause of this neglect? We feel assured that a great part of the fault has rested with the members of the profession themselves. They have been apathetic and indifferent to their rights; they have not urged upon those in authority their fitness, and theirs alone, for certain offices, nor have they, seemingly, seen the necessity of making a stand for the privileges they possess. Hence many have received appointments who are not graduates of the Royal College of Veterinary Surgeons.

But we are now progressing in the right direction, slowly though it may be, for we were pleased to see that at a meeting of the Court of Common Council for the City of London, held in the Council Chamber, Guildhall, on the 7th of February last, the "Markets Improvement Committee" recommended, that in the selection of inspector to prevent diseased cattle being exposed for sale at the metropolitan market, in place of Mr. Rice, M.R.C.V.S, who has retired from office, "*none but regularly qualified veterinary surgeons should be allowed to become candidates for the vacant office.*"

The Report was agreed to, and it was further ordered that the election should take place at the next court. There are several candidates in the field of equal merit; and, as but one can win, we feel assured that he will receive the congratulations of his competitors, for this is but an honest and a proper rivalry.

It is not for us to dwell upon the advantages that result from such an appointment. Of this we may be sure, it would never have been made, had not the necessity for it existed. That the public derive a benefit therefrom is indirectly shown by the quantity of unwholesome meat which finds its way into the London markets, principally the carcases of diseased animals, both cattle and sheep; many tons being reported week after week, by Dr. Letheby, as having been seized by the inspectors. Our readers may remember a prosecution which appeared in the daily papers during the month of February, when a salesman of Newgate Market was heavily fined by the presiding magistrate for unlawfully exposing for sale the carcases of five sheep which were alleged to be in a diseased state, and totally unfit for human food, and this has been followed by several similar instances. We would have transferred the reports of these cases to our pages, but for want of room.

Our object is now, however, rather to show that such sheep, being affected with the disease called "rot," and very much emaciated, would not, as such, have been permitted to have been sold in the cattle-market under veterinary inspection. The meat-consuming population have then a fair guarantee of obtaining proper food from this source; but the supervision leads, as we have shown, to the slaughtering of diseased animals in the country, and forwarding them to other markets as "dead meat." These City prosecutions will do much to put a stop to this practice; but we may ask, without prejudice to existing regulations, whether the best persons have been chosen to fill the office of inspectors? Would not Dr. Letheby himself feel that he had the right kind of support in difficult cases, if the inspectors had received a medical education which especially fitted them to speak of the nature and consequences of diseases affecting cattle, sheep, or pigs? Veterinary surgeons we consider to be eminently fitted for this duty, and they alone should be appointed to these offices. Practice may do much in detecting alterations in the quality of the flesh of an animal, but practice conjoined with science will do a great deal more; and we do hope that, ere long, not only in London, but throughout the entire country, members of

the Royal College of Veterinary Surgeons will be appointed the inspectors of the markets for the sale of meat, alive or dead. Then, and not till then, will the nefarious practices which now obtain be properly kept in check, and the public health be duly cared for.

We extract the following remarks on this subject from *The Lancet:*

"We believe that it will no longer be necessary to repeat, as we have often done, the statement of the vast extent and deleterious influence of the infamous traffic in diseased meat in London, merely with the view of keeping this great abuse fresh in the minds of the profession, and preventing it from becoming permanent by neglect and oblivion. Thanks to the lively sense which the Sewers Committee of the Corporation of London entertain of their duties as guardians of the public health, and to the intelligent activity of their officer of health, active measures are being taken for putting an end to this dangerous and filthy trade. Week after week we have read of the seizure of so many thousand pounds of diseased meat, slaughtered for the consumption of the poor. Medical officers of health know well enough that the amount seized is but a fraction of the quantity exposed for sale, and actually consumed by the poor, who are tempted by the lowness of its price. Henceforth the names of the willing vendors, when detected, and of the purveyors of this unhealthy and disgusting food, will be published, and, where possible, proceedings will be taken to punish them. The public exposure will in itself be a severe punishment, and it may be hoped that the penalties of the law will be rigorously enforced. We have already expressed our fear that the present machinery is insufficient for the complete detection of those who are culpably involved in this trade. Unquestionably the most guilty persons are those who wilfully and designedly slaughter and send to market meat which they know to be unfit for human food. The rigid inspection of slaughter-houses and markets will be insufficient to baffle the enterprise and ingenuity of those who are concerned in this proceeding. They well know how to forward their dangerous wares direct to the retailers without filtering them through the larger central markets, and, by splitting up the localities of sale, to render efficient inspection and general detection practically impossible. There is reason to believe that the amount seized bears no proportion to the quantity of diseased meat actually sold and consumed. We know of no more effective plan of overcoming

this difficulty than by appointing inspectors to examine the meat when it arrives at the different railway-stations, and thus to cut off the principal avenues of approach. It is, however, gatifying to see that energetic efforts at repression are being made even in a more limited sphere.

"The success of the first prosecution undertaken is a matter of congratulation. The case was very clear. Five rotten sheep were seized in one salesman's shop; of course 'a most respectable man,' as was agreed on both sides. The inspector who seized them described them as rotten, and so wasted with disease that they did not weigh more than eighteen to twenty-five pounds each—less than a fourth of what should have been their normal weight. They had been sold by a Mr. Firmin to Mr. Dixon, at the rate of $2\frac{1}{2}d.$ per pound. Dr. Letheby gave evidence that if such meat got into the animal body in a partially cooked state, it produced either low fever or violent vomiting and purging. On the other hand, there was a surprising unanimity of evidence amongst a body of salesmen, who declared that the disease was hidden when the meat became frozen; that it is common for healthy sheep and lambs to be brought to London weighing not more than seventeen to twenty-five pounds each, and to be sold at $2\frac{1}{2}d.$ per pound. When we add to this fact that the defence was conducted by the solicitor of the Butchers' Association, we may conclude that it was a very healthy example to fine Mr. Firmin £10; and it is clear that the inspector's business is not likely to come to an end just yet. It is useful, although not agreeable, to know that a body of 'respectable salesmen' partake these remarkable opinions, and concur in these extraordinary statements as to fact."

Extracts from British and Foreign Journals.

ON VIVISECTIONS.

In our last volume we felt ourselves called upon, more than once or twice, to denounce the cruelties that are frequently practised upon animals, under the plea of the advance of science. We are aware that the reasons assigned for their adoption are the acquirement of sound scientific knowledge, connected with physiology or the functions of parts, and the ready performance of surgical operations, for both of which they may be said to be of more than questionable utility.

The Royal Society for the Prevention of Cruelty to Animals, it will be also remembered, nobly took the subject up, and appointed a committee to confer with a similar society in Paris, hoping to obtain its co-operation, so as to put a stop to the system of vivisection, more especially as it is practised in the veterinary schools of France. (See pp. 396 and 670.)

To this application a report was drawn up, in the form of answer, in which, if vivisections were not altogether justified, an attempt was made to show the advantages that were derived from them, and now we have a rejoinder, issued by the Society of England, entitled—

"*Report on Vivisection, by the Committee appointed for the consideration of that subject, with an Appendix, containing extracts from various notices which recently appeared in the London newspapers, in condemnation of that practice, which this Committee considered necessary to republish, in order to strengthen their objections to a Report approving of that practice, prepared by* M. A. SANSON, *in the name of a French Commission, on the ground that the dissection of living animals was indispensable for physiological acquirements, and consequently advantageous to human beings, which was laid before a general meeting of the Paris Society for the Protection of Animals in the month of October last, published in its Monthly Bulletin, and copied into various publications in this country.*

"This Committee, advocating as it does the cause of dumb and helpless animals against such revolting cruelties, repeated day after day, until life becomes extinct, has directed its principal attention to the following extracts from that report which appear to embrace the whole question at issue:—'*If we can establish the fact of its having rendered service, of ever so trifling a nature, we must defend the practice, and be permitted to infer the probability of ulterior advantages as well.*'

" '*If the question were propounded thus before an assembly of physiologists, it would excite nothing more than a smile.*'

"Supported as these views are by such distinguished characters as the members of that commission, and transmitted to us, as it has been, by the Paris Society, so celebrated for its exertions in the cause of humanity; the only course open to us was that of referring it to competent judges on questions of this nature, in order to ascertain, in the first place, how far this practice was necessary for these ends? and, in the next place, how far the evidence it adverted to could justify such conclusions? as in all tribunals of justice on the evidence alone the verdict should depend.

"Upon the first of these questions we obtained the following opinions:—That a knowledge of man can only be acquired by anatomical experiments on human beings.—That experiments on animals of different species are more calculated to lead to erroneous conclusions than advantageous results.—That this knowledge is better acquired after life is extinct than during the struggles and sufferings of living animals; we, therefore, consider that we are rendering a greater service to mankind, and to the cause of humanity in every sense of the term, by opposing than by supporting the doctrine comprised in this quotation from that report.

"Upon the next question, as to how far the evidence adduced in that report, as favorable to this revolting practice, could sustain the conclusions thus arrived at? we obtained the opinion of Mr. Macilwain, F.R.C.S., &c., &c., an eminent practitioner, who, having directed his attention for a series of

years to this subject, and published various works upon it, we considered the most competent to be found for such an opinion, and we find that Mr. Macilwain has been enabled, by a reference to the works of the principal authorities, quoted in that report as favorable to this practice, to prove the reverse to be the fact.

"The name of Sir Charles Bell, for instance, is the first noticed in this report, to whose experiments, it states, we are indebted for many valuable discoveries, subsequently confirmed by Magendie, Muller, Valentin, Longet, &c. The quotations from the works of Sir Charles Bell prove, however, that so far from vivisectional operations being, in his opinion, advantageous, 'he found that on the animals he operated upon being put to death, he was better enabled to conduct his experiments, not from consideration for the sufferings of the animal, but because its sensations under such suffering obscured his reasoning, and detracted from the effect of his demonstrations. That such experiments had never been the means of discovery. That the opening of living animals had done more to perpetuate error than to enforce just views. That in a foreign review of his papers he had been considered as being in favour of vivisection, whereas those papers had reference to deductions from anatomical, not vivisectional experiments.'

"Longet, another authority, quoted as favorable to this practice, appears, on reference to his works, to be still more opposed to it than Sir Charles Bell. This reference affords at the same time a remarkable illustration of the interminable conflicts as to the different results arrived at by different vivisectors, and in regard to Magendie, one of the most celebrated, Longet states that the importance he attached to certain alleged discoveries of his by means of that practice, '*were purely imaginary.*' That Longet's own opinions were, 'That experiments on animals of a different species, so far from leading to useful results as regarded human beings, had a tendency to mislead, as, in seeking benefits to mankind, it was necessary to have recourse to pathological facts founded on experiments on human beings.'

"We must confess that we are at a loss to know how these opinions would justify conclusions in favour of this practice, on the ground of its assumed advantages to human beings, and such hypothetical doctrines as those comprised in the passages quoted from this report, 'That if the fact could be established as to this practice having rendered service of ever so trifling a nature, it should be defended on the probability of ulterior service as well,' and that, 'If the question were propounded thus before an assembly of physiologists, it would excite nothing more than an incredulous smile.'

"On this portion of the report, Professor Owen, one of the first physiological authorities of the present day, observed that, admitting such advantages to have been attained, instead of exciting a smile, an attempt to show the usefulness of vivisection in the advancement of physiology would rather excite regret, from the known neutralizing consequences of attempts at absolute prohibition.

"On the repetition of such practices for the instruction of pupils, this eminent authority also observed, 'That no teacher of physiology is justified in repeating any vivisectional experiments merely to show its known results to his class or to others, that it was against abuses of this nature that humanity, Christianity, and civilization should alike protest.'

"To protest, as thus recommended, against such abuses, the friends of humanity, Christianity, and civilization have found useless, without power by law to put a stop to them. With such power, a favorable decision could be easily obtained before any tribunal, even an assembly of physiologists, on the case, as laid in these two extracts, had an advocate been allowed to plead for dumb animals, as in cases of human beings, who, in France and this country, cannot be punished without a fair trial. But this is not the case

with quadrupeds, who have no other guardians than Protection Societies. M. Alexis Godin, a distinguished member of the Paris Society, and equally distinguished as an advocate in the Imperial Court of Paris, observes on this point, in one of the voluminous works he published in the cause of humanity, and against vivisectional cruelties—

"'That these quadrupeds have the more need of kind defenders, as they cannot defend themselves—as they suffer more ill-treatment and injustice—as they can pay no fees—as they can neither praise, extol, nor fraternise their advocates—nor feed their luxury, their vanity, nor their ambition!!'

"Vivisection he considered an outrage on God and man. 'Is it,' he asks, 'the progress of anatomy or surgery that is sought? If so, these sciences would be studied with greater calmness, and consequently with greater success, on dead than on living bodies; for harden ourselves as we will, we are always more or less affected by the sight of suffering, when you see nought but disorder and confusion in the sound of cries, groans, and resistance of the poor victim. To acquire a knowledge of the normal state of the animal, is not by means of horrible suffering, transported into a convulsive state, which has no resemblance to the original one; so that this cruel procedure, under the plea of science, is no more than an imaginary, false, and erroneous conclusion.'

"So long, however, as assemblies of physiologists sit with closed doors, and exclude such independent advocates of humanity as M. Godin, they would be sure to have the decision on their side; but if such advocates were permitted to plead for mercy to dumb animals, and to protest, in the name of humanity, Christianity, and civilization, against a decision that a continuation of such cruel practices was indispensable for the benefit of the human race, when their own principal witnesses declared 'that experiments on animals of a different species, so far from leading to useful results, as regarded human beings, had a tendency to mislead, as in seeking benefits to mankind it was necessary to have recourse to pathological facts, founded on experiments on human beings,'—the decision would probably be in a different sense from that implied by the question, as thus put in this quotation.

"This committee can come to no other conclusion, under these circumstances, than that, in order to put a termination to all future discussions on this subject, an assembly, or a committee of physiologists, or other competent judges, should be formed in London, and another in Paris, by the London and Paris Societies, at which, like other tribunals of justice, the doors should be thrown open, and advocates on both sides admitted, to ascertain whether or not the practice of vivisection is necessary for the benefit of human beings? if not, whether it should not be interdicted by law? or, whether, if continued, it should be restricted within certain defined limits, and under a licence, first obtained from heads of dissecting schools, or other competent authorities?

"That, in the mean time, every publicity should be given to all publications and reports that have appeared on the subject, and such other steps taken as may be calculated to make an impression on the public in favour of this interdiction of its abuses, if not of the practice itself.

"In order to promote this object, we have inserted, in an Appendix, such extracts from publications, which recently appeared in France and in this country, as we have considered calculated for that purpose."

[Extracts from the "Appendix" will be given in our next number.—EDITORS.]

VIVISECTIONAL CRUELTIES.

To the Editor of 'The Lancet.'

Sir,—Apropos to the discussion on vivisectional cruelties, which has recently occupied a place in your columns, will you allow me to suggest the adoption of a method of procedure which I have long thought would be a great improvement upon the present mode of practising operations upon the dead subject in our dissecting-rooms, and which, if adopted at the veterinary schools at Alfort, and elsewhere in France, would effectually substitute the horrible cruelties which are there practised upon living animals. The only excuse which the advocates of the present system—justifiable, in my opinion, on no ground whatever—can have is, that operations upon the living differ from those performed on the dead subject, by the fact that the flow of blood following the first incision in the former, somewhat obscures the remaining steps of the operation, necessitates the frequent use of sponge, forceps, and ligature, and is apt, at first, to embarrass a novice, whose only experience has been gained in the anatomical theatre.

To render, therefore, operations upon the latter on a par with the former, I would propose that elastic bags containing fluid, coloured so as to resemble respectively arterial and venous blood, be connected with the principal vessels of the limb or part to be operated on in the dead subject, so that, by the compression of the hand of an assistant, or a superposed weight, the fluid would be forced along the main trunks, and would issue in jets at any small branches that may be incised during the operation, so necessitating the use of sponge, ligature, and forceps, and rendering it as nearly similar as possible to a like procedure in the living.

Anxious as I am, in common I am sure with the majority of your readers, to see the horrors of vivisection terminated, permit me to suggest to your correspondent, Sir J. Scott Lillie, that the better plan would be to memorialise the Emperor of the French, calling attention to this subject. There would be no difficulty in obtaining the signatures of the most eminent surgeons, veterinary surgeons, and physiologists, and I do not doubt that his Majesty, who is well known as one of the first horsemen in France, would be readily induced to abolish, by Imperial edict, the cruelties which every right-thinking mind must deplore.

I am, Sir, your obedient servant,

Chales Taylor, M.D.

Nottingham; *January*, 1861.

NEW WARRANT FOR INCREASING THE PAY AND PRIVILEGES OF THE FARRIERS IN THE ARMY.

VICTORIA R.—Whereas We have judged it expedient to revise those parts of Our Royal Warrant of the 1st July, 1848, which regulate the rates of pay of the Farrier Major and Farriers, and the rate and appropriation of the Farriery allowance to regiments of Cavalry, and other mounted Corps of Our Army.

Our Will and Pleasure is, that in all regiments of Cavalry and other mounted corps (the Royal Artillery and the Royal Engineer Train excepted) the pay of the Farrier Major, Farriers, and Shoeing Smith, of which latter class there shall be one to each troop, to act as assistant to the Farrier, shall, from the date of this Our Warrant, be as follows, viz.:

	Life Guards.	Horse Guards.	Cavalry, including Military Train.	Cape Mounted Riflemen.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Farrier Major .	4 0 a day.	3 9 a day.	3 8 a day.	3 4 a day.
Farrier . . .	3 2 „	2 11 „	2 6 „	2 3 „
Shoeing Smith .	2 7 „	2 4 „	1 11 „	1 8 „

The Farrier Major, while serving, shall have the rank and clothing of a Quartermaster Sergeant, and, on discharge, the pension of that rank.

The Farrier, while serving, shall have the relative rank and the clothing of Sergeant, and on discharge a special rate of pension equal to that of Sergeant.

The Shoeing Smith shall be of the rank of private.

The Farrier and Shoeing Smith shall be entitled to all the advantages of the Good Conduct Regulations.

The Farriery allowance for all services, including the Royal Artillery and Royal Engineer Train, shall be fixed at One halfpenny a day for each effective troop horse on Home Service, which is to be paid to the Troop or Battery Farrier, for the provision of iron, fuel, and tools.

When a regiment or detachment shall proceed on Foreign Service, the Farriery allowance shall cease from the date of disembarkation, the supply of Shoes and Shoeing Tools being then made from the public stores. The shoes on the horses' feet at the time of landing shall be considered the property of the public, for which an equivalent will have been received

by the Farrier, from the Halfpenny a day allowed for each horse while on board ship.

Given at Our Court, at St. James's, this Fourth day of February, 1860, in the Twenty-third Year of Our Reign.

By Her Majesty's Command,

SIDNEY HERBERT.

THE FOOD OF PLANTS, AND HOW THEY TAKE IT.

By Dr. JOHN A. WARDER.

A Paper read before the Pomological and Horticultural Society of Southern Illinois.

(*Concluded from p.* 113.)

IN support of the recommendation to apply the manure unfermented or fresh, I may again refer to the great loss of ammonia that is sustained by fermentation, and also let me assure the timid one that he need not be afraid of losing his manure spread upon the surface, if the soil have been prepared for its reception. Of all the wonderful things on the face of the earth, what is more surprisingly wonderful than the soil itself? . . When we find that its chief ingredients possess the power of retaining just the very elements that are designed for the food of plants, which it will then hold firmly, not allowing them to be leached out by water, but ever ready for the roots of plants, we have reason to admire the wisdom that has so planned and ordered it.

Baron Liebig, in his recent work on modern agriculture, says: "There is not to be found in chemistry a more wonderful phenomenon, or one which more confounds all human wisdom, than is presented by the soil of a garden or field.

"By the simplest experiment any one may satisfy himself that rain-water, filtered through a garden or field, does not dissolve out a trace of potash, silicic acid, ammonia, or phosphoric acid. The soil does not give up to the water one particle of the food of plants which it contains. The most continuous rain cannot remove from the field, except mechanically, any of the essential constituents of its fertility. The soil not only retains firmly all the food of plants, which is actually in it, but its power to preserve all that may be useful to them extends much further. If rain or other water,

holding in solution ammonia, potash, phosphoric and silicic acids, be brought in contact with the soil, these substances disappear almost immediately from the solution; the soil draws them from the water. Only such substances are completely withdrawn by the soil as are indispensable articles of food for plants; all others remain wholly or in part in solution. If a funnel be filled with soil, and a dilute solution of silicate of potash be poured upon it, there will not be found in the filtered water a trace of potash, and, only under certain circumstances, silicic acid. If freshly precipitated phosphate of lime or phosphate of magnesia be dissolved in water saturated with carbonic acid, and filtered in like manner through soil, there will not be found a trace of phosphoric acid in the filtered water. A solution of phosphate of lime in dilute sulphuric acid, or of phosphate of magnesia and ammonia in carbonic acid water, composts itself in the same manner. The phosphoric acid in each case remains in the soil. Charcoal reacts in a similar manner with many soluble salts; in this case, it is a chemical attraction acting from its surface, but in the soil its constituents take part in the action." This remarkable property is not found to exist when solutions of substances are used which do not furnish food to plants; it is in their case especially that this wonderful property exists in the soil.

The value of these interesting facts is immense. As a purifying agent, there is nothing better nor so cheap as clay, which possesses this power in a high degree. In the collection of liquid manure in tanks, the decomposition and escape of ammoniacal vapours may be wholly arrested by using clay as an absorbent; and, until the soil becomes saturated with these substances, the liquid that passes through is found to be devoid of smell; all the rich plant-food has been left in the compost. When one change of soil has become saturated, another should be introduced.

Liquid manures, especially when largely diluted with water, are found to be highly serviceable; certain elements of the food of plants are thus carried to the soil; other matters equally needed by vegetable organizations are not soluble, and cannot be thus conveyed. The impression which has prevailed, that all plant-food must be reduced to a liquid form to enter the little root-mouths (*spongioles*) is perhaps erroneous. Water is needed as food, and is absorbed as water; other substances, soluble in this menstruum, are conveyed into the organism with it; but Liebig contends that the roots have the power of taking in these matters without their previous solution. He says that "We have

supposed the food was carried in solution in rain-water and carbonic acid to the roots of plants, which were thus like sponges, half in the moist ground, half in the air, continuously absorbing by their roots, and evaporating by their leaves. Whatever was in solution passed with the water into the roots, and by the process of nutrition was appropriated by the plants. The soil and the plant being passive, ... we believed that the water was the carrier of the most remote elements of the soil to the immediate presence of the plant. . . . But all this has been a great mistake."

Examinations of rain-water that has passed through the soil and collected by drainage, of spring-water, and of river-water, show that they do not take up those substances that are known as plant-food in any considerable quantity. "These substances are present in the soil, in a condition fit for absorption by the rootlets of plants, though not themselves soluble or removeable by the rain-water, until the soil is saturated with them. It is more than probable that the majority of our cultivated plants receive their nourishment directly from those portions of the soil which are in immediate contact with their rootlets, and that they die when their food is presented to them in solution. The action of *concentrated* manures, burning the young plants, seems to support this supposition."

". . . It follows that the plants must themselves play some peculiar part in the absorption of their food. As organized living structures, their existence is not quite dependent on external causes. . . . They select from the soil those substances which they require, but which can only pass into their interior by the co-operation of a cause which resides within their rootlets. . . . It is very difficult to explain in what way plants act in causing the solution of mineral substances. As a matter of course, water is indispensable in the operation."

Green manures have been highly extolled, and not without cause. Though they can add nothing to the mineral wealth of the soil, they add carbonaceous and nitrogenous matters, having collected the elements from the atmosphere; further, they bring up mineral matters from the subsoil, which they penetrate with their long roots, and in their decay they enrich the upper soil for the use of cereals and such other plants as chiefly occupy this portion as their range in search of food. It will be readily guessed that annual plants need to have their food more accessible than perennials, such as trees, which have a wide and deep range.

Before concluding this paper, I ask to thank one of the

members for his kind assistance in preparing this report. Mr. D. B. Pierson is, as you all know, deeply interested in whatever concerns the advance of horticulture. He is a good observer, and has proved himself a good practitioner in the art of preparing the soil so that it shall produce good crops. From a communication addressed to the Chair, your committee have condensed the following practical recommendations:

"Guano, when properly pulverized and evenly scattered over grass lands or well-cultivated grounds just before the fall rains, produces a marked effect upon the crops of the following season. The residuum from glue-factories, and that from the rendering establishments (bones) have highly fertilising properties, and may be applied upon ploughed or trenched ground in the fall, or composted with an equal bulk of stable manure, or sod, or loam, to be applied at convenience. These substances should be applied with caution."

He also highly recommends the manure-pit, into which all refuse matters should be thrown, with alternating layers of sods or loam, leaves, leaf-mould, stable manure, &c., and the whole to be moistened by a pipe from the kitchen sink to bring all waste water from that department—the drain from the water-closet should also terminate here. He thinks this application of liquid would prevent fermentation, and that if the mass did ferment, the water would absorb the ammonia, and thus be improved as liquid manure.

For the indication as to the best season for applying manure, Mr. Pierson cites Dame Nature, who makes her applications in the autumn, and thus keeps up a constant fertility — whereas, the fields that come under man's culture generally grow poorer the longer he has charge of them.

After some remarks upon vegetable physiology, he reiterates: "For spring crops I should apply manure, whether fermented or not, upon the surface of the ploughed ground, about the 1st of November, or before the setting in of the fall rains, and, in the spring, plough the residuum under, and mix thoroughly with the harrow." For fall crops, he would make the application before the final ploughing, and thoroughly mix with the harrow, and then cover the seed with the drill or harrow, never with the plough. Evaporation never hurts manures or composts thus applied, the watery particles only escape. Thoroughly prepared composts may be applied at any time when the earth is in a condition to receive them; but he prefers to manure his trees, shrubs, and plants, in the autumn, when he thinks that the earth is

preparing to digest the food to be used by the crops the next season, though thay may be active to a cerain extent even now.

ARSENIC IN DRINKING WATER.

In a former number we adverted to the moot question of poisoning the water of the Thames by the agent resorted to for its purification—the sesquichloride of iron—which has awakened a notable controversy, now familiar to our readers. It would, however, appear from the following extract from the *Chemical News*, that water containing arsenic is not always and of necessity prejudicial to health, but oftentimes it is contrariwise. It is, therefore, the quantity that kills.

Note on the Arsenical Water of Whitbeck, Cumberland, by Arthur H. Church, F.C.S.

The recent reliable accounts of arsenic-eating in Syria, the controversy as to the effect on the Thames water of arsenical perchloride of iron, and the detection of arsenic in numerous mineral waters and deposits, invite special notice to the occurrence of this element. And now that the influence on the animal economy of arsenic in minute but repeated doses is attracting so much attention, I think that the following account, incomplete as it at present is, of an arsenical drinking water will prove interesting. My attention was first directed to the subject by the Rev. Mr. Wilkin, of Booth, to whom, as well as to the Rev. Mr. Ormanby, of Whitbeck, and Dr. Fidler, of Whitehaven, I am indebted for much information and assistance.

From the northern and western sides of Black Combe, a mountain in the southern part of Cumberland, stiuated near the sea, numerous streams or *becks* originate; I believe that one only of these exhibits any marked peculiarity. Whitbeck, such is the name of this stream, is fed by several small springs, and it was from the source of the most southerly of these, where it rises from the ground, and at an elevation of about 900 feet from the sea, that I obtained a specimen of the water for examination.

On the 29th of June in the present year, the water, at the time of collection, had a temperature of 8° 5′ C., the air being 10° 6′. The reaction of the water as it issues from the earth was faintly but unmistakably alkaline; on testing the water after ebullition the effect was more decided. The water from

many other sources in the neighbourhood of Whitbeck, where decomposing granite is of common occurrence, has an alkaline reaction. A large and deep pool in the course of Whitbeck towards the sea shows the colour of the water to be a rich, clear, greenish blue.

The water, on examination, gave distinct indications of the presence of arsenic. This element, which here probably exists as an alkaline arsenic, occurs not as a mere trace, but in determinable quantity. I have not yet ascertained the amount present, but hope to do so shortly, when I have obtained specimens of the water collected at different seasons of the year. I have satisfied myself, however, that in some seasons of the year the quantity present approaches a good fraction of a grain of arsenic (metallic) in each gallon of water. At the same time I am desirous of furnishing complete analyses of some interesting minerals obtained from the vicinity of the spring. For on ascending the gulley, a few yards above the source of Whitbeck, we arrive at the entrance to a mine, which, some years ago, was worked for cobalt and copper, and is now again being searched. Here I obtained very rich and massive, silver-white, arsenical cobalt ore, and also copper pyrites. The neighbourhood for some miles is, in fact, rich in minerals. Dr. Fidler writes: "Almost immediately behind Whitehaven Parsonage a sulphur vein crops out, a continuation of the same vein that is being worked at Under Hill, but whether it exists in any quantity I do not know. There are three or four copper veins in a ravine behind Whitehaven Mill, one of which has been tried some twelve or fifteen fathoms below the surface." Baryta, also, has been found, I am told, above the source of Whitbeck in the mine above mentioned.

It will be seen that the arsenic in the water of Whitbeck is thus most probably derived from the veins of arsenical cobalt ore through which it percolates.

The arsenical water is *habitually used for every purpose* by the inhabitants of the little village of Whitbeck, and, as far as I can learn, with beneficial rather than injurious results. But it is remarkable that Whitbeck, though in every respect suitable for trout, is the only stream in the neighbourhood from which that fish is absent; eels, however, have been found in it. Ducks will not live if confined to this arsenical water. When the railway was being carried past Whitbeck, the first use of the water quickly produced the usual marked effect on the throats both of the men and horses employed on the works. The soreness of mouth from which they at first suffered soon, however, disappeared, and in the horses

gave place to that sleekness of coat assigned as one of the effects produced by the administration of arsenic. It is a question how far the rosy looks of the Whitbeck children and the old age which a large proportion of the inhabitants of the village attains are to be attributed to the arsenic present in the water they drink.

FACTS AND FALLACIES CONNECTED WITH THE RESEARCH FOR ARSENIC AND ANTIMONY; WITH SUGGESTIONS FOR A METHOD OF SEPARATING THESE POISONS FROM ORGANIC MATTER.

By Alfred S. Taylor, M.D., F.R.S.

(*Continued from p.* 101.)

Arsenic as an Impurity in Copper.

It has hitherto been considered that one of the great advantages of Reinsch's process was that, while hydrochloric acid might easily be obtained pure, no question could arise about the impurity of copper. The presence of arsenic in the purer forms of this metal was, until 1859, either not suspected or wholly ignored by chemists of the highest authority. It now turns out that there is no kind of copper available for use which is free from arsenic; and some kinds of foil and wire hitherto used, and still employed by analysts of repute, contain arsenic united to copper as arsenide in comparatively large proportion. As this question is of considerable importance, not only in reference to the present, but the future employment of this useful process in judicial investigations: and, from causes which I need not here enter into, it has not hitherto received that calm attention which it merits, I shall endeavour to lay before the reader the facts which I have ascertained regarding the presence and influence of this impurity in a medico-legal analysis.

In turning to Reinsch's original report of his discovery, it will be found that, while he enforces attention to the purity of the *acid* employed, he merely directs that the *copper* should, previously to use, be cleaned with nitric acid, washed in water, and rubbed dry with filtering-paper. These are all the precautions given by the discoverer in reference to the selection of the copper. In fact, upon his plan, any copper might be used, provided it had a clean surface. The test which he employed to determine the purity of his materials was that which has been in use among toxicologists up to the present day, namely, before introducing the suspected sub-

stance, to boil a piece of clean copper with the diluted hydrochloric acid for four or five minutes; and if it did not acquire any tarnish or deposit, the copper and acid were to be regarded as sufficiently pure for the detection of the poison. Undoubtedly a negative result of this kind would be a proof either of the entire absence of arsenic from the metal itself, or, if present, that it was so intimately combined with the substance of the copper as not practically to affect the application of the process in a medico-legal analysis. Resting upon this simple datum, Reinsch says of his method, "Elle ne peut donner lieu à aucune méprise."* Dr. Christison, who has employed it during a period of fifteen years for detecting arsenic in the liver, says, in his last edition on Poisons,† that "copper-leaf or copper-plate, worn thin by the action of diluted nitric acid or *fine copper gauze*, is the best form for use. . . . . In all medico-legal inquiries it is necessary to perform a preliminary experiment with distilled water and the hydrochloric acid used, *lest the acid contain arsenic*. . . . It (the process) is not subject to any fallacy." If any additional authority is required to show how little toxicologists of great repute and enlarged experience suspected that arsenic was lurking in the copper which they were so frequently using, or that there was any better method of testing the purity of the materials than that originally devised by Reinsch, it is furnished to us in the extensive experience of Mr. Herapath of Bristol. In an article already referred to, this gentleman thus describes his mode of operating:‡

"I take pieces of copper wire about No. 13 size, and two and a half inches long; these I hammer on a polished plane for half their length, and having brought the suspected matters to a state of dryness, and boiled the *copper blade* in the pure hydrochloric acid, to prove that *it* (the acid) contains no metal capable of depositing, I introduce a portion of suspected matter, and continue the boiling," &c. If there is a deposit, it is removed by scraping, and tested. Referring to the fallacious results which occasionally arise from accidental causes, Mr. Herapath further says: "As much of the sulphuric acid of commerce, and nearly all such hydrochloric acid, and some commercial zinc, contains arsenic, nothing can excuse a toxicologist who attempts to try for arsenic if he has not previously experimented with *all* his reagents before he introduces the suspected matters."§

(*To be continued.*)

* 'Annales d'Hygiène,' 1843, p. 452.
† 'Treatise on Poisons,' fourth edition, 1845, p. 272.
‡ 'Ure's 'Dictionary of Arts,' Part i, 1859, p. 191.
§ Loc. cit.

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Journaldes Vétérinaires du Midi, Sept. and Oct., 1860.

SKIN DISEASE (LICHEN) IN THE HORSE.

By MM. Marly and Caussé fils, Veterinary Surgeons, 11th Chasseurs.

Twelve horses were attacked with this disease in the month of February, 1860. All of them were young horses of the last remount. Little lumps existed along the neck and on the shoulders, and within, which raised the hairs slightly. Depilation took place on some of the most prominent ones, and underneath was found a white pellicle covering a concrete yellow liquid. This malady appeared without fever or any general derangement; neither did the soldiers perceive any loss of appetite in those that were attacked. The eruption seemed to have a particular course from the neck, descending to the withers and shoulders, along the back to the hind quarters and the superior parts of the ribs. The legs never appear to be attacked. The duration of this affection was from two to three weeks, and its termination was always in resolution. The treatment consisted in first clipping the hair off the affected parts, then applying with friction the tincture of cantharides: or an ointment was used, consisting of 1 part of mercurial ointment, 1 of ointment of cantharides, and 2 of sulphur ointment; of this often only one application was required. To facilitate the removal of the scabs, a solution of soda was resorted to.

The author, in his *résumé*, avers that this skin affection has not been described by any author on skin diseases in the horse, and is consequently unknown. Further, that it has great analogy to the "lichen," an eruptive disease described by Cazenave and Schedel.

VOMITING, COUGH, AND ATROPHY IN A COW, PROBABLY CAUSED BY A PUNCTURE OF THE PNEUMOGASTRIC NERVE.

By M. Festal.

A THREE-YEAR-OLD cow, eight months in calf, was slightly deranged in health, for which it was deemed necessary to bleed her. This was done with a heavy blow given by a clumsy blood-stick on the fleam. On the infliction of the blow, the cow made a sudden jump, accompanied by a loud lowing, and this was so remarkable, that the proprietor could not help exclaiming, "You have killed my cow!" The pain, however, soon subsided, and on some hay being given to the animal at feeding time, she took the first mouthful with avidity, but the subsequent one only slowly, and after having taken the third, she stood back, lowered her head, and brought up the last bolus, and in succession the two former ones, each being perfectly distinct. This regurgitation being completed, she again took three more mouthfuls, and these were brought up in the same manner. A third attempt had also the same result.

This peculiarity lasted for ten days, when the proprietor sent for M. Festal, who found the cow much emaciated and very weak, but presenting no symptoms of impaired health. The respiration was, however, somewhat increased, although auscultation of the chest indicated nothing abnormal. Rumination had ceased ever since the accident. M. Festal ordered some hay to be given to the animal, when the above-described swallowing and regurgitation were repeated in exactly the same manner as before. After a great many surmises—such as the existence of strictures, tumours in the œsophagus, &c.—the conclusion arrived at was, that the pneumogastric nerve had been punctured in the act of bleeding, although there appeared neither thrombus nor phlebitis.

The treatment in this case was both difficult and uncertain, as before the puncture could become cicatrized, the animal might be starved. As liquids, however, had not been regurgitated, there was some hope of sustaining life by means of them. For six days not any solid food was given the animal. The emaciation was now frightful; the flanks nearly touched, the pulse was very weak, and yet, on the whole, the patient seemed to be healthy. A handful of hay was now given her, and some water directly after. No regurgitation having occurred, and being emboldened by this, a double handful of

hay was ordered to be given her every two hours, and the treatment, otherwise to be continued. All went on well for some days, when the proprietor, considering the cow to be cured, gave her at once one kilogramme of hay, when, at the tenth mouthful, the regurgitation recurred. From this time, however, with better regulation of the diet, nothing unfavorable took place until nearly two months after she was first taken, when M. Festal was again sent for. She had calved some time before, and the cow was now in good condition and fed well; she also seemed to be in good health; nevertheless, the respiration was accelerated, and she had been affected with a cough during the last month. The cough was frequent, dry, and irritating; the respiratory murmur was distinctly audible in the left lobe of the lungs, although somewhat feeble, while in the right lobe it was sensibly increased; but on the whole, there seemed nothing abnormal in the lungs, neither were there any indications of effusion in the pleural sacs. There being but little chance of a favorable result, on a subsequent visit the advice was to sell the cow to the butcher, to which the owner agreed. As the cow was sold to a coper, no post-mortem examination was made when she died, which was about three months after.

TYPHOID FEVER IN A YOUNG COW.

By the Same.

The author remarks that the existence of typhoid fever in our domestic animals has been denied by some persons, and admitted by others, but he believes in its existence, and gives this case as an instance of it.

A young cow had travelled some distance to and from a fair, where she had been sold as a milch cow to a dairyman. She was off her feed on arriving home, and seemed fatigued. She was consequently left for a short time, but not getting better, the author was sent for. He found the animal much emaciated, feeble, stupified, her eyes fixed; the pulse, though not hard, was jerking, nervous, and intermittent, beating 40, then 50 and even 60, in the minute; the mucous membranes were injected and yellow; the mouth dry, but the lining membrane presented nothing particular; the skin was hot over the whole body, but more so about the head; decubitus frequent; the excrements soft, and sometimes watery and yellow in colour; thirst increased; urine natural. On auscultating the chest, nothing abnormal could be detected, except a little wheezing at the upper part.

The diagnosis was uncertain. It might be an affection of the brain, or the wheezing at the chest might indicate the commencement of tubercles in the lungs. For a few days there was no change under the treatment adopted, when an abundant eruption appeared all over the body, but more so under the belly and inside the thighs. The pulse was still of the same character, but weaker; the appetite, which had remained tolerably good, was now lost; rumination became suspended, and great debility prevailed. The eruption increased, and in those parts of the skin that were but scantily covered with hair small, red tumours could be seen, of an elongated shape, and painful when touched. They were filled with a reddish fluid. The abdomen became painful on pressure, the evacuations were fetid, sero-bilous, bloody, and accompanied by false membranes of various sizes. These symptoms increased in intensity until death took place.

Autopsia.—The viscera of the chest were healthy, as was also the brain; the spleen was softened; the liver seemed enlarged; the gall-bladder was much distended, and filled with thick bile; the rumen, the reticulum, and omasum presented no alteration, but the omasum was inflamed, and its appearance recalled to the mind the eruptions on the skin when they began to desiccate; in the duodenum were similar eruptions as in the stomach, but here they were more developed; the remainder of the small intestines were ulcerated throughout. The cæcum presented the greatest change, so much so that it was difficult to conceive how the cow could have lived so long. The whole of the inner coat was converted into one mass of ulcers, and towards the centre there was a perforation large enough to pass an egg through, and which seemed to have existed for some time before death took place, as there were strong, pseudo-membranous adhesions between it and the peritoneum. The colon was less affected; the rectum was healthy, and a quantity of liquid was effused in the abdominal cavity.

USE OF PLASTER OF PARIS IN FRACTURES OF BONES.

By the Same.

The author is indebted to his friend, Dr. Devals, for the suggestion of the use of this agent, which is, in his opinion, preferable to any other hitherto employed. The formula is as follows:—Plaster of paris, finely powdered, q. s. to make a soft paste; gelatine, 2 grammes; water, 1000 grammes. The gelatine is to be dissolved in the water, after which the plaster

is to be gradually mixed with it, and applied to the fracture in concentric layers.

The author gives several instances in which he has successfully resorted to it.

EXCISION OF THE UTERUS OF A COW.

By M. Claverie.

On the 10th of June, 1860, a three-year-old cow was placed under the author's care. She had prolapsus uteri, and the fœtal membranes were still adhering to the cotyledons. Two men were holding the prolapsed organ on a sheet. After having duly cleansed the parts, the reduction of the uterus was made with great difficulty. The patient was then put in the most favorable position for its retention; stitches were passed through the vulva, added to which a figure 8 bandage was applied, but, as the expulsive efforts continued, the animal was bled, and sedative medicines were given. Notwithstanding that she got better for two or three days, the prolapsus returned four days after the reduction had been made, tearing away the stitches and forcing off the bandages. Considering that a repetition of the reduction would be altogether useless, the author proposed the excision of the uterus, to the proprietor of the cow, to which he assented, as he thought his cow would be lost. All necessary preparations being made, the uterus was brought out of the vulva as far as possible, a long needle was then passed through it, close to the vulva, and a double ligature applied. This was deemed strong enough to prevent hæmorrhage. The excision was now proceeded with, and the remaining part allowed to re-enter the pelvic cavity. But as the animal had made great resistance during the operation, a considerable quantity of blood escaped from the parts, and it was deemed necessary to withdraw the stump of the uterus, and to apply another ligature. The parts were also cauterized, by the application of the red-hot iron. The hæmorrhage being thus arrested, the parts were again allowed to enter the cavity. The after-treatment consisted in the employment of cooling lotions, and powdered charcoal sprinkled over the parts. During the first ten days the animal was rather dull; the secretion of milk, and likewise the appetite, were somewhat lost; but soon everything went on well, her condition improved, the secretion of the milk became abundant, and as the cow is now in a manner castrated, this increased secretion is expected to continue for a long time.

Review.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

General Remarks on Stables, and Examples of Stable Fittings. With illustrations. By W. Miles, Esq., &c. London: Longman, Green, Longman, and Roberts.

In our review of this work there will be seen many points in which we are compelled to differ from the author; nevertheless, considered as a whole, we find much in its pages worthy the perusal of those who are about to erect new stables, or to alter old ones, so as to make them more suitable for the accommodation of horses.

The public cannot but feel indebted to Mr. Miles for the trouble he has taken in getting up this, in many respects, useful book. Praise is due to every one who endeavours to ameliorate the sufferings of the poor horse, an animal who not only forms a large portion of the wealth of this and other nations, but also, without the aid of a *Rarey*, docilely contributes in so many ways to our comfort. Surely, therefore, he has a claim upon us for good lodging and kind treatment.

To treat a horse, or indeed any other animal, cruelly, would be making us the *tyrants*, and not the *lords* merely, of the creatures over which it is said we have dominion. What must be the feeling of any man who, day after day and year after year, witnesses the noble horse, the native of the desert and the prairie, where—

"With flowing tail, and flying mane,
Wide nostrils never stretch'd by pain,
Mouth bloodless to the bit or rein,
And feet that iron never shod,
And flank unscar'd by spur or rod,"

tied by the head to the further end of a narrow stable, unable, as the author justly observes in his introduction, to turn his head to ascertain if friend or foe approaches him? To think that so useful an animal should have his comforts so much curtailed, cannot be otherwise than painful

to the mind, and we may add, by a custom so prejudicial to his health, and productive of loss to the owner.

Such a course of procedure has been protested against over and over again, and the author has done well in bringing this subject before the public in the prominent way he has.

The advantages to be derived from keeping horses in loose boxes, instead of stalls, is obvious to all reflecting minds, and the surprise is that stalls should be erected at all, except, perhaps, in bait stables.

Aspect of the stable.—The author, to our surprise, considers a northern aspect preferable to a southern one. To this opinion we are inclined to demur. Only a short time since we had occasion to inspect a gentleman's stable which fronted the north, and the dreary, chilly appearance of everything we noticed particularly attracted our attention. The owner also felt quite conscious of this defect, and informed us that he intended to have the buildings all pulled down, as he considered his horses had never done well since they had occupied them.

With regard to the admission of the sun's rays, and the annoyance of flies and other insects, alluded to by the author, these can, to a very great extent, be obviated by the use of "Venetian shutters," which would sufficiently darken the stable when needed, and at the same time allow plenty of air to pass into the interior of the building. There is certainly one half of the year when the warmth imparted by the sun's rays would be agreeable, and also conducive to health. Did space permit, it would be easy to point out the benefits to be derived to animal as well as vegetable life from the influence of light and warmth. The task, however, would be much easier to expatiate upon the *evils* arising from the absence of such health-giving powers.

Height of the interior of the stable.—The author asserts that no stable should be more than ten and a half feet high; also "that a stable forty feet long, nineteen feet wide, and ten feet high, cannot be efficiently ventilated, and at the same time retain a genial temperature under every change of circumstance." Now, in our opinion, no stable ought to be less than ten and a half feet high from the floor to the

ceiling; and we think that large stables may be as much as fifteen or sixteen feet high with great advantage to their inmates. For many years we have been in the habit of passing through stables sixteen feet high, and during the intensely cold period of 1860-61 we did not experience a temperature at all injurious to the health of the horses it contained. Likewise, during the hot summer of 1859, although this stable faced the south, no unpleasant heat was felt. On the contrary, it was often observed by those who accidentally passed through it, "How beautifully cool this stable is!" And it might have been even more so had it been, as before suggested, furnished with Venetian blinds, which would have prevented, to a great extent, the annoyance which was at times experienced from the flies. We therefore cannot but think that our author is wrong when he states that no stable should be more than ten and a half feet high from the floor to the ceiling. Just fancy a horse in a state of nature, with the canopy of heaven as his only covering, and an almost unlimited scope of vision, and contrast this with his being "cribbed, cabined, and confined" in a stall perhaps only five feet wide and ten feet high, and in many instances less. Must not such be painful to the animal's feelings?

Drainage.—The author attaches great importance to drainage, and in our opinion justly so. Nevertheless we think his method of carrying out the details are far too complex. The hidden drains which he advocates the use of are likely to become obstructed, unless more attention is paid to them than, from our experience, is likely to be the case. Stablemen are generally not sufficiently observant of cleanliness. We therefore prefer surface drains, having simple coverings. These drains should be so contrived that they will carry the fluid from the stable into the main drain, this being several feet from the outside of the stable.

Temperature.—The temperature of the stable is doubtless a very important subject; and if it can be regulated so that it ranges from forty-five degrees Fahrenheit in the coldest weather to sixty or sixty-five degrees in the hottest summer months, it would be desirable. But I fear that a stable

only ten feet high, and full of horses, with the thermometer standing at eighty degrees in the shade, would be found uncomfortably hot, assuredly much warmer than if the stable were from fourteen to fifteen feet high, and containing the same number of horses. In the winter season a lofty stable, if well built, will not be found too cold; at any rate, we have not found it to be so.

The author's remarks respecting the effects produced on the horse by a sudden transition from a heated stable to one of a very low temperature are very much to the purpose, and have doubtlessly been often observed by all horsemen. But we may add that, in our opinion, much more harm has accrued from a sudden transition from the cold air to that of heated stables than has ever taken place from a horse going out of warm stables into the cold atmosphere.

Flooring of stables.—This has also been duly considered, and, as far as our experience goes, the author has pointed out the best mode of constructing them, as well as the best materials to be employed for the purpose. He has not, however, alluded to the use of the blue Staffordshire bricks for paving, which, in durability, are equal, if not superior, to *Dutch clinkers*, while they are much cheaper.

With regard to the partitions and doors of boxes, as given by him, we think the former are too low and the latter too narrow. In other respects they are all we could desire.

We are daily in the habit of seeing loose boxes, the divisions of which are eight feet high, and we have occasionally seen horses, even in them, nibbling each other over the top rail. We therefore consider seven feet, the height the author proposes, too low, and that the doors should not be less than from three feet ten inches to four feet wide. The width may vary, according to the amount of space leading thereto. If this be narrow, so that the horse has to pass into his box in an oblique direction, then a narrow door is more objectionable than it would be if the passage were of a greater width, so as to enable the horse to enter the door at a right angle. Oftentimes considerable mischief is done to horses' hips by the doorways into stables and boxes not being wide enough.

With reference to mangers and racks, we are disposed to

differ materially with the author, both as regards the material they are made of and also the mode of constructing them. We have thought that iron, in a sanitary and likewise in an economical point of view, is far preferable to wood. The iron manger is not likely to absorb any deleterious emanations from diseased horses, or to retain—as wooden ones are liable to do, either between the joints or in the flaws of the wood—vegetable substances, which often, by decomposition, become offensive and, in a degree, prejudicial to health.

The author thinks that an iron manger is objectionable on account of its coldness. Now, we have never seen the slightest reason to object to it on that account.

The arrangements made for placing the bedding under the manger during the daytime, are, we think, highly objectionable. Indeed, we had thought it was altogether abolished in all well-regulated stables. Straw, saturated with urine, packed under the manger, immediately beneath the eyes and nostrils of the horse, must be injurious; and we would advise a discontinuance of such a practice at once.

The necessity for having a tank in the manger, so as to keep a constant supply of water before the horse, is not so necessary as many persons suppose it to be; and, independent of that, we consider there are many objections to its being done, especially in connection with wooden mangers. The horse is an animal that does not take water very frequently when in a state of nature; it is therefore to be inferred that he does not require it very often even in the artificial state we have placed him; and should it be kept constantly before him, he may acquire the habit of *tippling*, perhaps to an extent, like many bipeds, injurious to his health.

I have frequently known horses get into the habit of playing with the water when kept before them, and, in doing so, splash it about the manger and the surrounding fittings to an unpleasant extent.

We cannot raise any particular objection to racks, if they are fixed in the position the author proposes, namely, on a level with the horse's head, when only moderately elevated. But we protest against their being placed so high up from the floor as we have often seen them in stables. We have,

on many occasions, seen horses, on the hay being put into the rack, at once set about pulling it all out again on to the floor before they commenced eating any of it. This certainly indicates the most natural place for the horse to feed from. Besides which, there are often seeds and dust falling into his mane, and possibly into his eyes also; consequently, we should prefer the hay being put into a hay-box made for the purpose, or simply placed upon the floor.

Ventilation.—This subject is not passed over by our author without a due consideration of its importance. It is evident that he is fully aware of the necessity of a good supply of pure air into stables. Neither has he neglected to provide means to carry off that which is vitiated by the animal's excretions. In a work of this kind it would be very desirable if the actual amount of pure air that is required for the number of horses the stable may be intended to contain could be determined, and also, the magnitude of the apertures through which it is intended to be admitted, as well as for the escape of that which is unfit for further respiration.

This knowledge can only be ascertained by calculations, the data for which we are not fully provided with, and the task would have involved more time and space than the author, in all probability, intended to devote to this subject.

We cannot but think, however, that the plan recommended by him for carrying out this important end is unnecessarily complicated, and that the same object might have been obtained by simpler means.

With reference to light, Mr. Miles thinks it highly important that as much as possible should be admitted into stables. At page 53 he says, "I believe, as a general rule, that a stable can scarcely have too much light admitted into it." Now, with a northern aspect, which he insists is preferable to a southern one, how can this possibly take place, especially during a great part of the year, in this not over-bright atmosphere of England? We therefore cannot help again repeating that, in our opinion, a southern aspect has many advantages over a northern one.

With regard to the various utensils recommended by the author for the harness-room, saddle-room, and other

offices belonging to a small establishment, he has been very profuse, and those mentioned by him are doubtless very convenient for the different purposes for which they are required.

We find, by referring to the catalogue of Messrs. Cottam and Cottam, St. Pancras Iron Works, London, that they are identical, or nearly so, with those manufactured and sold by that firm, whose stable-fittings are very extensive, and suitable for almost every variety of stable.

In concluding our review of this work, we may observe that it is very nicely got up; the illustrations, eleven in number, are very neatly executed, and altogether it is a publication worthy the perusal of gentlemen and others about to build good and healthy stables. In some future edition we hope to see utility, simplicity, and a strict regard to healthiness, extended to all varieties of stables. These objects the author has aimed at, and to a considerable extent attained; but we think there are some few points which require reconsideration, with a view of abandoning them altogether, and others that may be modified with considerable advantage.

Veterinary Jurisprudence.

WOOLWICH.

IMPORTANT CONVICTION FOR CRUELTY TO HORSES.

John Gosling, a licensed horse-slaughterer, carrying on business at Plumstead, Kent, appeared before Mr. Maude, in answer to two summonses, obtained against him by Mr. W. Love, of the Royal Society for the Prevention of Cruelty to Animals, charging him as follows:—"For that you, on the 9th day of January instant, did neglect and omit to supply a sufficient quantity of fit and wholesome food and water to thirteen horses, and that you did neglect and omit to cut or cause to be cut off, the hair of the necks of eleven horses brought to be slaughtered to the place kept and used by you for the slaughtering of horses, contrary to the statute 12 and 13 Vic., cap. 92, sec. 8," &c.

Mr. John Wakeling, solicitor, of Clerkenwell, instructed by Mr. Love, appeared for the prosecution, and Mr. H. Davis for the defence.

Mr. J. Wakeling said the society for which he appeared, in taking these proceedings against the defendant, was actuated by no other feeling in the matter than that of a sense of public duty; and he would show by the evidence of the respectable witnesses he should call, that

the defendant had not only not conformed to the rules and regulations laid down for his guidance by the act of parliament, but that he had been guilty of acts of reckless cruelty to a number of poor unfortunate animals brought to his place to be slaughtered. That his (Mr. Wakeling's) instructions were to press for severe punishment, in order to show the defendant and others engaged in the same trade that they could not set the law at defiance, and commit these offences with impunity.

Several officers of the society and other witnesses were then called, whose evidence went to show, that information having reached the society of the cruelty and neglect shown by the defendant towards old worn-out horses which were brought to his place to be slaughtered, they were sent to Plumstead on the 9th inst., and they saw in a small field belonging to the defendant, and adjoining his premises, thirteen horses. The field was covered with frost and snow, and there was not a particle of food or water that the animals could get. The whole of the horses were in the worst possible condition, and gradually starving to death. One was found eating ravenously masses of straw and rushes, which were covered with mud in a ditch. Another was seen lying in the field in a frightful state of disease, aggravated by the frost, and its hoof nearly rotted off. The whole of the horses were more or less diseased, and presented a sickening sight, and eleven of them had not been disfigured according to the terms of the act of parliament. The defendant was called to the spot by the officers, and he admitted that the animals had been in the field three or four days, and that he neither fed nor watered them, because he considered they could get sufficient in the field; and if he had not complied with the act of parliament he must stand the consequences.

Several witnesses were called for the defence, and it was endeavoured to be shown that the field was not in the state represented by the officers. The state of the horses was admitted.

Mr. Davis made a lengthy address on behalf of the defendant, contending that no case had been made out upon which the magistrate could convict. He stigmatised the prosecution as being a vindictive and vexatious one; observing that, because the defendant's premises were an eyesore to the neighbourhood and a nuisance to the government, whose premises abutted the defendant's, this step had been taken with a view to the ultimate cancelling of his license, which would entail ruin upon him.

Mr. Maude said the case had been very clearly made out under the section of the act of parliament upon which the summonses were taken out. The defendant had also shown a degree of cruelty and neglect to these poor wretched creatures in their, what he might term, dying moments, as must astonish every one who had heard it. The law that had been passed by the legislature for the supervision of places kept by persons of the defendant's calling was a very wholesome one, and the society did well in directing its attention to these places. The prosecution was a very proper one, and for the first offence he should fine the defendant £4 and the costs. With regard to the second he did not look upon that in so serious a light. It was proper, however, that this part of the act should be carried out, for it effectually prevented these wretched animals being sold to work again after they had been received at the premises of the slaughterers to be killed. He should levy a fine of £1 and the costs in that case, and he trusted that it would have the effect of deterring the defendant from the commission of like offences in future.

COURT OF QUEEN'S BENCH, Westminster, Feb. 2.

(Sittings at Nisi Prius, before Mr. Justice Blackburn *and Common Juries.)*

METCALFE *v.* LAWRENCE.

Mr. O'Malley, Q.C., and *Mr. D. D. Keane* appeared for the plaintiff; and *Mr. Serjeant Ballantine* and *Mr. D. A. Freeman* for the defendant.

The plaintiff in this action was Mr. Metcalfe, the barrister, and he brought the present action against the defendant Lawrence, a livery-stablekeeper at Brighton, to recover damages for a breach of warranty of a horse. The defendant denied that he had given the warranty, and also alleged that the horse was sound.

It appeared that on the 2d of November last, being the first day of Michaelmas Term, the plaintiff was out with the foxhounds on the South Downs, near Brighton, and saw the defendant riding a handsome horse. He asked the defendant whether the horse was in the market, and was told that it was, that it belonged to a foreign gentleman, and that the price was £100. The plaintiff wished to be allowed to try the horse, which he did on the Sunday following, and liked it so much that he said he would buy it if it passed the veterinary surgeon. The plaintiff had previously asked if the horse was sound, and quiet to ride, and told the defendant that he wanted it for his wife to ride, and, being satisfied on this point by the defendant's assurances, he agreed to have the horse. Having business in town which required his attendance, he left a cheque with Mrs. Metcalfe, and that lady having also seen the horse, and being assured by the defendant that it was a quiet animal and suitable for a lady to ride, she paid him the cheque, and took the receipt. The horse was then fetched away, and taken to Silverthorne's stables. It there soon showed evident signs of bad temper, and when the plaintiff began to ride it he discovered that it was so vicious as to be quite useless. It sometimes would not stir for a quarter of an hour, though it would always go home readily enough; it kicked and reared up on its hind legs, so as to be in danger of falling backwards. The plaintiff, after keeping the horse about three weeks, called upon the defendant to take it back, and repay the money. The defendant at first held out some hope that he would do so, but, eventually, he refused; and the plaintiff, after giving the defendant notice, had the horse put up for sale at Tattersall's, where it fetched only £32 odd, and brought the present action to recover the difference and the keep.

Mrs. Metcalfe was examined, and confirmed her husband's evidence as to the warranty; and "*Tom*," the groom, who had had charge of the horse at Silverthorne's, proved his vicious qualities, and said he had found it necessary to knock the horse over the head between the ears, when it reared, to keep it down.

The *defendant* was called, and positively swore that he had not given any warranty; that he had never even said the horse was quiet, though he would have said so had he been asked; and that, when asked whether the horse would suit a lady to ride, he said he could not answer for that, as it had never had a side-saddle on. It was suggested that the rearing was occasioned by Tom's ill treatment in knocking the animal over the head, and that such treatment was enough to spoil the best horse in the world. The defendant admitted that what he told the

plaintiff about the horse belonging to a foreign gentleman was not true, as he had bought it of a Mr. Clive in February last for 40 guineas.

A man named *Lambert* was called by the defendant, and he said he had been in the habit of riding the horse for the defendant several times a week, and that he always found it quiet. He said if it had not been so he could not have sat the horse, as he had lost the use of the right side of his body through paralysis, and though he had recovered the use of his arm, he still felt a numbness in his right leg.

The jury found for the plaintiff—Damages, £75.

SECOND COURT.—February 6.

(Sittings at Nisi Prius, before Mr. Justice Blackburn, *and Common Juries.)*

TIPPING *v.* CROFTS.

This was an action for money had and received, and also on agreement to return 50 guineas in respect to a horse for which it was deposited, for conversion of the cheque, and there was also a plea of fraud. The defendant pleaded never indebted, infancy, and other pleas.

Mr. Hawkins, Q. C., and *Mr. Keane* were counsel for the plaintiff; *Mr. Serjeant Pigott* and *Mr. Addison* were counsel for the defendant.

The plaintiff is a gentleman residing at Brasted Park, Sevenoaks, and in October last his attention was directed to an advertisement of a horse to be seen at Paragon Stables, Paragon Street, Hackney. The horse was described as young, a perfect hunter, &c., and on going to the stables the plaintiff was pleased with the appearance of the horse; and as the advertisement stated a ten days' trial would be permitted, he had the horse sent to his home for that purpose, depositing at the defendant's request his cheque for fifty guineas as a security. When the horse arrived at Brasted Park he was examined by a veterinary surgeon, when he was found to be over eleven years old, and not to answer the description. The plaintiff wrote to the defendant, and sent the horse back, and demanded the return of the cheque. That, however, was refused, on the ground that there was only to be a two days' trial, and the horse had been kept five days.

The jury ultimately returned a verdict for the plaintiff for the amount claimed.

HULL COUNTY COURT.—Thursday.

(Before W. Raines, Esq., *Judge.)*

Several applications for new trials, &c., being disposed of, the following was the only case of interest:

HORSE CASE.—WALLIS *v.* CALEY.

This case was tried by jury, and occupied the whole afternoon.

Mr. Chester appeared for the plaintiff, and *Mr. Pettingell* for the defendant.

The plaintiff, who is a raff-merchant in Wellington Street, Hull, sued defendant, who is a farmer residing near Burton Constable, for £25 damages, under the following circumstances: The plaintiff, Mr. Wallis, having some time in July last informed defendant that he was wanting a rully horse, the latter replied that he had one which would just suit. The horse was brought over to Hull and shown to plaintiff, who said it was a better horse than he had expected to see. According to the plaintiff's statement, the defendant said the horse was perfectly sound, and £25 was asked for it. The plaintiff paid £10 down, and agreed to pay the remainder in a fortnight afterwards, if the horse was what it was represented to be. Subsequently, the whole of the purchase money was paid, when the plaintiff found that his horse did not walk properly, but did not say anything about it to Mr. Caley for five or six weeks at least. In December, Mr. Lockwood and Mr. Freeman, veterinary surgeons, were called in to inspect the horse, and they found it was diseased, being affected with ringbone, or an ossification of the pastern joints, and plaintiff wrote to defendant, informing him that the horse had turned out badly. Another letter was afterwards addressed to defendant by plaintiff's attorney, offering the alternative of a reference or an action, but defendant preferred the latter course.

Mr. Lockwood and *Mr. Freeman* gave evidence as to the time they thought it would require to produce the ossification, and they both thought it would require eight or nine months; but the latter, who had watched some cases from their commencement, thought it possible that the parts might acquire an ossified state in eight or ten weeks, though when assistance was procured at first the cases were generally cured.

A *Mr. Newmarch* was also called to prove that when the bargain was made, defendant had said the horse was sound, and that plaintiff had said he would give what was asked for if the horse proved to be what was said.

A discussion then arose as to whether the statement of defendant that the horse was sound amounted to a warranty, the Judge thinking it did not.

Mr. Chester contended that as the horse was bought on condition of the representation being correct, a special warranty was constituted. This the Judge thought correct.

Mr. Pettingell, in his defence, submitted that in the first place there was no warranty given, and that if there was, the horse was not in an unsound condition at the time of being sold. The sale was made at the plaintiff's suggestion, and he had been satisfied with it at the time, and not a word was said about warranty. He also commented on the admission that the disease might show itself in eight or ten weeks, and contended that it had arisen since the horse had been in plaintiff's possession.

Defendant and another witness were called to prove that no mention of warranty had been made at the time of the bargain.

His Honour, in summing up, observed that the first point the jury would have to decide would be, whether a warranty had been given; and if they thought one had been given, they were to satisfy themselves whether the horse had been diseased at the time of sale to the plaintiff. The most conflicting part of the evidence was, where the plaintiff alleged he had informed defendant soon after the horse was in his possession that it was unsound, whereas defendant denied that anything was said about it until the first letter was written, though he had frequently seen him in the mean time. It was also admitted that the disease might have been generated in eight or ten weeks, and in the letter, written five

months after the sale, indicated by its language that nothing had been said about the disease before the date of it.

At a quarter to 6 o'clock the jury retired, and after an hour and a quarter's absence, returned a verdict for the defendant, but recommended that each party should pay their own costs, as they considered there was no imputation of fraud against either party.

ARMY APPOINTMENTS.

War Office, *Jan.* 29, 1861.

Royal Artillery.—Acting Veterinary Surgeon Thomas James Lang to be Veterinary Surgeon, *vice* Cleveland, deceased.

War Office, *Feb.* 15, 1861.

Charles G. H. Reilly, Gentleman, to be Acting Veterinary Surgeon.

MISCELLANEA.

CONCOURS IN FRANCE.

This system, heretofore much lauded by our Gallic neighbour, as often elsewhere, has just received a heavy blow and great discouragement from an Imperial decree, dated the 15th of January last, which orders that henceforth all Professorships in French veterinary schools will no longer be attainable by competition of voluntary candidates, but are to be directly filled up by the Minister of Agriculture's special appointment.—*Medical Times.*

ANIMALS IMPORTED INTO THE UNITED KINGDOM.

In the year ending 31st December, 1860, there were imported into this country from foreign parts 77,010 oxen, bulls and cows, 27,559 calves, 320,219 sheep and lambs, and 24,452 swine and hogs.

THE

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Communications and Cases.

ON THERAPEUTICS.

By Professor Brown, M.R.C.V.S.,

Royal Agricultural College, Cirencester.

(*Continued from p.* 134.)

Counter-irritants.

All agents which produce external irritation, of whatever extent, are termed "counter-irritants," although, by correct interpretation, the word should be applied only to those which cause "high," or "extreme" irritation. Counter-irritants are numerous — hot water, ammoniacal liniments, blisters, mustard cataplasms, caustics, setons, and the hot iron. Hot water and stimulating liniments occasion irritation and redness, and so are defined as "rubefacients." Cantharides cause effusion of serum under the cuticle, elevating it in the form of small vesicles, and hence are described as vesicants. Potassio tartrate of antimony and setons cause suppuration. Caustics and the cautery occasion, primarily, decomposition of the part to which they are applied, but subsequently inflammation and its products.

Counter-irritants act as derivatives, by virtue of their peculiar power of producing a certain impression upon the nerves, apparently by simple contact; an active local circulation is the immediate consequence, without any interference with the general functions, save where much pain is produced, in which case the local excitement extends over the system. As therapeutics, counter-irritants are indicated in a variety of

instances, and their action being so capable of modification, renders them of general utility.

As stimulants to the skin, or rubefacients, they are valuable in all cases where the circulation in the integument is defective. Ammoniacal liniments and camphorated spirits, aided by friction, are in an especial manner potent in this respect, and as they produce no pain nor excitement, are available in cases of even acute inflammation.

As vesicants, or even to the extent of causing suppuration, counter-irritants are presumed to be effective in internal inflammation. And theoretically the position is true, as they cause a diversion of nervous action, and occasion a determination of blood to the part where they are applied, and in this way afford a certain amount of relief to the affected organ. Their influence, however, upon the inflamed part we rather refer to their action upon the nerves than upon the vessels, as we cannot conceive any mechanical interference with the circulation in the capillaries of the lungs or intestines to be consequent upon the determination of blood to the capillaries of the skin, or a small portion of it; but we can understand that an impression upon the nerves of one part may moderate, or even destroy, an impression that previously existed in the nerves of another. Thus counter-irritations applied to the surface diminish internal inflammation, by diverting the abnormal excitement to another part of the body. Diminished capillary action will naturally follow the diminution of the excitement. Practically, however, there are two objections to the employment of counter-irritants in acute inflammation.

First, in the acute stage, the agent more frequently than not produces no effect upon the skin at all, in consequence of the absence of nervous action in the part, as indicated by the coldness and insensibility of the surface; a sufficient reason, in our idea, without the necessity for assuming an untenable position, to the effect that "no two diseases of the same intensity can exist in the body at the same time."

Secondly, when a sufficiently powerful action does result, the systemic excitement is so obviously provocative of an increase in the activity of the disease, that any benefit resulting from the influence of the agent upon the surface is utterly annulled.

For this, which is by far the principal reason, the best practitioners have discontinued counter-irritation in acute inflammation.

In the subacute, or chronic form, the advantages of counter-irritation cannot well be overrated; no difficulty is expe-

rienced in producing the effect required, while the excitement, so far from being an objection, is in many cases most beneficial; for instance, during a tendency to dropsical effusion and in the depression which usually supervenes upon acute disease.

The intensity of the action will be regulated by the nature of the malady. In subacute inflammations of mucous membranes, in catarrh, both laryngeal and bronchial, in spasm and acute diarrhœa, mustard, with ammonia or vinegar, acts immediately, and produces only a temporary excitement. In chronic mucous inflammation, attended with much secretion, setons are most efficacious, particularly if the animal be in plethoric condition.

In inflammation of the subacute form, effecting serous membranes, attended as it invariably is with effusion, and in all instances where the system suffers from debility after acute disease has subsided, vesicants take the precedence of the other agents. Acting quickly and energetically, they seem to produce an almost tonic as well as derivative effect, at no cost to the animal beyond a small loss of serum, of which there is, in such cases, usually an excess.

Under the empirical system of the old school, the torture of the "rowell" and blister was inflicted upon every unfortunate animal suffering already the pangs of an acute pneumonia; the practitioner of a more enlightened age, with his drops of aconite and grains of calomel, quietly unseats a disease which refuses to be expelled by seemingly more potent agencies. Nevertheless, he does not scruple to employ those agencies when they are indicated.

As remedies for defects of joints, ligaments, and tendons, and for the majority of osseous diseases, counter-irritants of the most potent kind are apparently indispensable. In spite of the outcry on the score of humanity, no effectual substitute is suggested. The seton may be advocated to the exclusion of the cautery, or the blister to the exclusion of both; but counter-irritation in some severe shape is admitted to be indispensable in many cases.

In veterinary practice it is much to be feared that the desperate diseases to which working animals are liable—the "spavins" and "sprained tendons"—will ever require desperate remedies. The abolition of the actual cautery is not, therefore, a possibility of our future, unless owners of animals will be content with a partial cure, and not insist, as they now do, that absolute and permanent soundness shall be the average result of veterinary treatment of cases which in human surgery would condemn a patient to a life upon

crutches, or, at best, prevent his performing a decimal part of the work in proportion to what will be required of a horse under similar circumstances.

In discussing the effects of counter-irritation in cases of exostosis, splint, or spavin, or deposit upon the edges of articular surfaces, fibrous deposits, sprains of tendon and ligament, relaxation of ligament or bursal enlargements, and various sub-acute or chronic inflammations, we may arrange the means under the three heads of "Blister," "Seton," and "Firing."

Blisters are employed in these cases for the purpose of removing any inflammation which may occasion lameness, or with the intention of diminishing a deposit. Their influence on inflammation we have already explained in reference to cases of internal disease. In the cases we are now discussing, the effect upon the circulation in the diseased part will be more marked in consequence of its proximity to the surface where the counter-irritant is applied. We cannot assume for a moment that the blood is diverted from the seat of disease by the action of an irritant upon the same spot; but undoubtedly there is a more energetic circulation through the whole of the surrounding vessels during the action, which probably removes the congestion, while the nerves receive a new and more healthy stimulus. Sometimes the deposits are lessened after the primary action has subsided, but not by any means usually. Iodine compounds, as the biniodide of mercury or iodide of potassium, have a more decided power in this respect than any other irritants, particularly when used in small quantity, and applied frequently. Blisters of any other kind, setons, and the cautery, certainly very often increase the amount of deposit, whether of bone or fibrous tissue.

Blisters are also applied in cases of sprained tendons or ligaments or enlarged bursæ. The benefits resulting are due to the rest which the application necessitates, and to the subsequent support from the thickening of the integument, which continues for a long time after a blister has been used. The good effects are commonly temporary; and for this reason blisters are inferior to the cautery in the treatment of these diseases.

Setons are more continuous in their action than any form of blister. Whether as "issues," "rowels," or in the common form of seton, they occasion inflammation and its results, effusion and ultimately suppuration. As the formation of pus is an exhausting process, consisting in oxidation and excretion of the colourless corpuscles, it will never be advisable

to employ setons duriug debility, unless there should be a tendency to the formation of abscess, in which case the purulent diathesis may be diverted to a portion of the body not important in its relations, and so the vital organs be protected; or in that state of the system where the blood is diseased (cachæmia), setons act beneficially, if we may judge from the amount of effete matter excreted. But it must be remembered that tonics and stimulants and dietetics will be necessary meanwhile to support the animal under the constant drain, which will increase the debility, even although the fluids removed be largely mixed with noxious matter.

In acute diseases setons are less objectionable than blisters, as they occasion much less excitement. On the other hand, their action is not developed so rapidly, nor do they affect the nervous system so markedly. Their influence being more direct upon the circulation of the part, they are most effective when applied close to the seat of disease. Thus, in acute "sore throat" we have found setons under the larynx to be very useful, and also in cerebral congestion.

In acute laminitis, frog setons are sometimes found to be effectual, although the destructive character of the malady forbids us to hope for much benefit from any kind of treatment.

In subacute or chronic disease, this form of counter-irritation is of undoubted value in cases of lameness from splint or spavin, especially those of old standing. In articular lameness, in chronic or subacute laminitis, in navicular disease, setons act by producing a diversion and establishing a new action in the vicinity of the disease.

In cases of suddenly arrested discharges and in the treatment of malignant growths setons establish a new outlet for the diseased secretions, and are so far derivative in their action.

As prophylactics, setons or rowels are very popular during the prevalence of epizootics, as pleuro-pneumonia, nor is it unreasonable to presume that the production of a certain irritation in one part of the body may lessen the tendency to a similar condition in another and more vital portion. Experience is in favour of the practice, which theory certainly does not positively condemn; besides, in epizootic affections the blood is invariably diseased before any local effects are developed; the action of the seton will, in this view of the matter, be advantageous, always on the understanding that the loss sustained by the system be compensated for by a nutritious diet.

Firing.—All counter-irritants differ in degree only; the general phases of their action we have seen to be—*First,* a

derivative effect upon the nerves, opposing the morbid stimulus present in the diseased texture. *Second*, a local excitement of the circulation, resulting in various degrees of inflammation, accompanied with deposits occasioning swelling. *Third*, the extension of the excitement over the whole system, when severe pain attends the application of the irritant.

After the immediate effects have subsided, the swelling gradually diminishes, and the part recovers nearly its healthy form, save that the skin is thickened permanently, and a considerable excess of areolar tissue is present beneath it. The decrease of any morbid deposit is invariably a very slow process; nor do we imagine, in the case of fibrous enlargement, that the removal is much accelerated by counter-irritation, excepting in instances where the circulation is defective, when counter-irritants, by altering this condition, may facilitate absorption after the excitement has ceased; at the same time it is fair to observe that fibrous thickening is frequently removed by exercise, with frictions and pressure, while in other cases it remains in spite of repeated blisters.

The general properties of counter-irritants are possessed in an eminent degree by the actual cautery.

Primarily, it causes a powerful derivant impression upon the nerves.

Secondly, it results in active inflammation, followed by effusion, suppuration, and sloughing of the portions of structure whose vitality has been destroyed by contact with the heated body. The subsidence of the inflammation is ordinarily attended with a healthy circulation in the diseased part, and frequently with an increased deposit of bone or fibrous tissue.

Lastly, the cautery leaves the skin thickened, and with a diminished elasticity. The question whether firing produces a permanent bandage round the part operated on, is still a disputed one, nor is it easy to decide upon it.

During the swelling which follows the operation and continues for some weeks afterwards, the subcutaneous textures are subjected to a certain amount of pressure, which is to a great extent removed as the limb recovers its natural proportions; still the partial loss of elasticity, and the general thickening of the integument, which we have seen some years after the operation, necessitate some constriction of the part, not unlike the effect of a perfectly adapted bandage. Not, however, to this alone do we refer the success attending the application of the cautery; we have to take into account the immediate influence upon the part, the subsequent formation of pus, and the absolute rest necessitated by the amount of

swelling, besides the support which the thickened integument gives to the part for a considerable time.

In exostosis, either splint, spavin, or other bony tumour in the vicinity of joints, firing frequently induces a larger and more healthy deposit, thus consolidating an imperfect formation, and occasionally completing an anchylosis, during whose partial existence lameness is inevitable from the motion between the diseased surfaces. The total arrestation of the movement is followed by restoration of soundness when the joint affected has only a limited action, such as have the joints between the large and small metatarsal and metacarpal bones, and the small bones of the hock.

In cases of recent deposit the active circulation and the suppuration succeeding the use of the cautery may cause the absorption, or otherwise the removal of the tumour, but in no instance would the operation be performed for this purpose only, the end, as we have stated, being more easily gained by the aid of some iodine compound.

Sprain, and its consequences, affecting ligaments or tendons, or relaxation of those textures from systemic debility, conformation, or other cause, are treated by firing, with most satisfactory results, the restoration being generally permanent. Thus, animals with severe sprain and thickening of the flexor tendons or suspensory ligaments, or with curbs, and others that have suffered from relaxed ligaments, of the patella, for example, are, after an effectual cauterization, almost on a par, save that they are blemished, with healthy subjects. We even venture to ask the practical observer whether a horse that has been fired for sprained tendons is not more likely to suffer from a similar injury in the opposite and healthy limb than from a recurrence of the accident in the diseased one? Under such circumstances we feel justified in the assertion, that in veterinary practice the firing-iron will never be superseded by any milder counter-irritant.

(*To be continued.*)

ON THE SUPPOSED INJURIOUS EFFECTS OF *ALTHÆA ROSEA*.

By Thomas Strangways, Lecturer on Anatomy and Physiology, Edinburgh Veterinary College.

In the November number of your Journal for 1860, a case communicated by Mr. Watson is published, "On the

Injurious Effects produced on a Cow, from eating a large quantity of Althæa Rosea;" and in the January number following there is an account of another case, by Mr. Howell, of a cow being poisoned by eating the same plant. I must, with due deference to your correspondents, call in question their toxological opinions. So far as my researches extend, all writers on materia medica agree, that in none of the species of althæa, including the rosea or hollyhock, is found any principle possessing even in the slightest degree either medicinal or poisonous properties. Every part of the plants of this species or family is mucilaginous, containing a large quantity of mucilage, a little starch, a small quantity of uncrystallizable sugar, and a crystallizable principle, named althein, which is without taste or odour, and perfectly neutral and inert.

Now both these cases, from the symptoms and from the fact of their occurring in summer, one in June and the other in July, appear to me to be well-marked examples of a form of stomach-staggers, called by Professor Dick grass-staggers, a short account of which I annex.

Grass-staggers, or as it is called by the farmers in different parts of Scotland, grass-ill, or the head-disease, and which by some veterinary practitioners goes under the name of vertigo, is a disease which was first noticed in Scotland in the end of June, 1846, when it appeared as an epizootic. It always makes its appearance about the end of June or beginning of July, continuing throughout the latter month, and sometimes not disappearing until the end of August. The affection is confined to animals that are either grazing, or fed on cut grass, and is always worst in very dry seasons.

The symptoms of it are, the animal is at first restless, this restlessness being speedily followed by dulness. It stands with its head protruded, and the whole of its feet drawn underneath the body. There is more or less insensibility, and the sight and hearing are partially impaired. A kind of shivering or twitching affects the muscles of the neck, shoulders, and hind quarters. The horns, ears, and extremities become cold, the coat is staring, muzzle dry, eyes glassy, and the abdomen is sometimes tucked in, at other times distended, depending upon whether or not it is accompanied by tympanitis. Rumination is suspended, and in milk cows the lacteal secretion disappears. The pulse varies in different cases, in some it is weak and oppressed, in others quick and strong, and the bowels are constipated. Should the animal be compelled to move, it does so with a staggering gait, reeling about as if drunk, frequently losing entirely the use

of its limbs; falling down, and for a time unable to rise. As the disease advances, the pulse becomes so quick and oppressed as not to be counted. Along with grinding of the teeth, and foaming at the mouth, the eyes become hollow, a dirty-looking mucus appears about the nostrils, and the poor brute gradually becoming exhausted, sinks at last, from excessive nausea produced by the complete arrest of the process of digestion.

Upon dissection, the rumen is generally found to contain its usual quantity of ingesta, and to be in a perfectly normal state. The reticulum is also found to be healthy. The omasum, in some cases, is found to contain a quantity of moist food, whilst in others it is found impacted with a dry, hard, and solid mass, as in "fardle bound," invariably however accompanied with congestion or inflammation of its mucous coat. The abomasum and intestines are also found to be in a highly congested or even inflamed state. The other viscera are perfectly healthy. The blood is quite fluid and very dark in colour.

The nature of the disease, in my opinion, is very obvious, and the progress of the symptoms can be readily explained, when the causes producing them, and the circumstances under which they occur, are considered. The disease, I have said, makes its appearance at the season when the grass on which the cattle feed, becoming fibrous and seedy, is not very easily digested, in consequence of which the functions of the stomachs become partially deranged. The half-digested food passes into the intestines, and there becomes a fresh source of irritation; the bowels also becoming sluggish, constipation follows, which aggravates the disease. The appetite is morbidly affected, being either ravenous or capricious and uncertain. From the great sympathy which exists between the stomachs and the brain, the latter organ becomes involved, and produces the peculiar insensibility and staggering referred to, when the animal is moved. Should an animal with its digestive functions impaired, and its appetite capricious, find any green food, it matters not what, either althæa rosea, or anything else, it eats voraciously, gorges its already weakened stomach, and in consequence we have what would have been a functional, and comparatively speaking an easily managed affection, hurried on to an acute, structural, and very formidable disease. The disease, in my opinion, is neither more nor less than acute dyspepsia, accompanied by brain symptoms.

The treatment of the affection consists in giving a good dose of purgative medicine, combined with an active stimulant, the

chief object being to get the bowels to act, and throw off the vitiated ingesta, and that as speedily as possible. Should the purgative not act, Quinine in ʒss doses, combined with Acid. Sulph., gtt. xxx, will be found very effectual in restoring tone to the stomach, and materially assist in producing purgation. If the head symptoms are very bad, or should frenzy seize the animal, which occasionally occurs, then dashing cold water on the head will be found of essential service.

This disease occurs in horses and sheep as well as in cattle, but in the former is by no means so violent or fatal as in the latter.

CASE OF HYPERTROPHY OF THE HEART.

By W. H. Dyer, M.R.C.V.S., Waterford.

Having read in your Journal the description of a case of hypertrophy of the heart, with some remarks by Assistant-Professor Varnell, it has brought to my mind a case of the same kind which I was called to see in June of last year.

The horse was about five-and-twenty years old, had been a splendid hunter, and had carried his owner about twenty seasons. He was almost always in a perfect state of health, and was known as being very excitable with hounds. I had known the animal about ten years, during which time he has had but an occasional dose of aloes.

In the early part of June last I was hurriedly sent for to see the horse in question, which I was informed was falling about as if affected with colic. Upon my arrival I examined the state of his heart and respiratory apparatus, and found the former beating but *twenty-four* times per minute—laboured and intermittent; respiration excited; eye amaurotic. To use a vulgar phrase, he was as "*blind as a bat.*" Though he staggered like a drunken man, he was, nevertheless, free from pain; at least, he did not suffer acutely. I gave him a sedative, which I deemed best to quiet the system, conjoined with a slight laxative, had him removed to a loose box, and cautioned the attendants to take care he did not fall upon them. The treatment adopted had the effect of relieving the symptoms; the heart's action increased, respiration became less excited and eventually tranquil, and the eye re-

sumed its usual appearance: in short, the animal was apparently restored to health the next day, and was soon put to gentle farm-work. In the course of the week I was again sent for in a hurry. I found the symptoms more urgent than before—pulsation twenty only, and laboured; jugular veins conveying their contents by jerks; eyes sightless; nervous centre deranged; staggering and falling incessantly; total loss of control.

In consequence of the age of the animal I advised the owner to have him shot, to which he assented, and I proceeded to make a post-mortem examination. After the integument was removed from the abdomen and fore and hind extremities, to the great consternation of two men who were assisting, the animal kicked one of them down, showing the effect of the knife upon muscular fibre a quarter of an hour after death had apparently taken place. All the viscera were healthy except the heart, which was enlarged to *double* its natural size; *every portion* of the muscular structure had grown regularly and evenly, and its colour was natural; the right ventricle, however, was slightly dilated. And here I may remark that I never examined the heart of a horse without meeting dilatation to some extent in that part of it.

In the April number of the 'Veterinary Record' for 1847 will be found several cases of dilatation recorded by me. Since that time I have seen a vast number of cases of disease of the heart; most of them possess two symptoms in particular, viz.,—either *partial or total loss of sight* for the time being; the standing posture is doggedly maintained—the respiration analogous to that of a horse with broken wind. *A-propos* "of broken wind." I have read of parties curing this malady,—and men, too, of high standing as veterinary surgeons: I may with *as much* truth assert that *I* also have cured a great many cases of broken wind. The fact is, in all cases of affections of the heart in the horse I have met with, the respiratory apparatus is so much influenced by the action of the heart that in the majority of cases broken wind appears to be the disease in question. But I think, with a very little more attention and observation on the part of those who are *noted* for *curing* broken wind, they will find that the lungs are merely *functionally* deranged; it is the heart alone that is affected. In the same way with regard to vision. We find that a great many cases of blindness are only sympathetic; remove the cause, the obstruction in the stomach or heart, as the case may be, and we shall find that sight will be again restored. With as much truth we should

say we have cured total blindness in a few hours. If I had time I could relate several such cases as this to which I have alluded.

ON THE USE OF THE TINCTURE OF ACONITE IN SPASM IN THE HORSE.

By J. M. Parker, M.R.C.V.S., Birmingham.

I do not know whether the attention of the profession has ever been directed to the good results following the administration of the tincture of aconite in cases of spasm of the horse, but having used it to a considerable extent in my own practice, I take this opportunity of stating my experience, hoping that others, who value simplicity in the various formulæ they employ, may give it a fair trial. In all cases of spasm I commence by giving ten drops of the Tinct. Aconit. of the Pharmacopœia, in a pint of cold water, combined with an ounce of Sp. Vini.; the sedative effect on the system is almost instantaneous, and in cases where the dose is given within an hour of the first symptoms of uneasiness, the pain is relieved at once. The first signs of the powerful effect of this drug are, grinding of the teeth, twisting of the jaws, and attempts to vomit; the force of the pulse is depressed, but sometimes the beats are more rapid; the horse generally lies down at full length, and in a few minutes becomes in a comatose state. The time of repose—for such it is—varies. In cases of recent origin—not exceeding an hour—the patient lies still for half an hour, or thereabouts; but in cases where the pain has been excessive, and there has been much knocking about, I have known my patient lie quietly for some hours, giving me the impression that after the fatigue consequent on the violent exertion of dashing about and struggling, the animal is really glad to lie still and have a "good rest." The dose very rarely requires to be repeated, but it may be in twenty minutes or half an hour after the first one. It sometimes happens that, owing to the struggles of our patient, a portion of the draught is wasted; and I am inclined to think, that in cases of *pure spasm*, this is the only circumstance which renders another dose necessary.

There are several advantages connected with the use of this drug, of which I will point out a few. In the first place it does not accumulate in the system, or produce anything like continuous nausea, which last is important, for in many instances

the horse belongs to a man whose livelihood depends upon the work his beast performs, and of course he is expected to work again as soon as possible. I have known several cases where the patient has fed in half an hour, and gone to work as if nothing had been amiss; either has there been any return of the pain. And here I may say that colic can be cured without having recourse to purgatives, and the "three days' rest" attendant on the giving of the physic ball. In cases of obstinate constipation without any great disturbance of the pulse, the aconite may be given, in combination with a purgative, to relieve the uneasiness connected with the overloaded intestine. It keeps the animal quiet, and prevents those struggles which are often disastrous and cause twisting of the intestines, and in some instances rupture of the diaphragm, stomach, or intestine. The dose of ten drops can be given safely in such cases every half hour till an action on the bowels is produced. It will not interfere with the cathartic where the practitioner deems that heroic remedy necessary. I have seen aconite and enemata do all that was *needed*, and at no expense to the system.

In enteritis, in its most acute form, aconite is very beneficial in allaying the agony attending that disease. Here the dose may be administered every twenty minutes, and is a most useful adjunct to other treatment. In all cases, in fact, where a sedative is called for, I think this agent would be found very useful; but as my object in this sketch is more especially to advocate its use in spasm, I hope I have stated enough to induce all those who march with the times to give it a fair trial. All I have written on the subject has happened in my own experience; and, as an admirer of cleanliness in all medicines, when the effect desired can be obtained, I trust that the various mixtures of oil, water, spirits, and the "villanous smell" of some noted colic medicines, may give way, and be laid aside with the salves with which wounds were tortured, until a better knowledge of surgery was taught.

REMARKS ON THE IMPROVED (?) HORSE-SHOE.

By J. D. Broad, M.R.C.V.S., Bath.

In the last month's '*Veterinarian*' there are woodcuts of a horseshoe, patented by Mr. H. Withers, V.S., Royal Artillery, as something new. I beg to state that horses were

shod at my forge with shoes exactly like those in every particular nearly twenty-five years ago, but their use has been discontinued for some years past. There are several objections to them. They are more difficult to be kept on than ordinary shoes, even if the feet are good and strong; and for weak or shelly feet, they are very unsuitable; for with many such feet the nails cannot be so placed as to give them a chance of staying on; there is also a much greater tendency to break away the crust at the quarters than with an ordinary shoe. Finding it difficult to keep them on, we drew an extra clip from the inside of each half shoe at the heels, so as to come down over the bars in the commissures of the foot, by which means we found they stayed on much longer. But after giving them a fair trial on the horses of different gentlemen as hacks and harness horses, they were found not to answer as well as the ordinary shoe.

I inclose the names and addresses of a few of the gentlemen who gave the shoe a fair trial at the time above stated, and any person wishing to refer to either of them is at liberty to do so,—JOHN BAILWARD, Esq., Manor House, Harsington, Wincanton; W. MCADAM, Esq., Victoria Park, Bath; and Messrs. HADDY, Job-masters, Bath.

Facts and Observations.

SERIOUS LOSS OF SHEEP FROM CASTRATION.

A VETERINARY surgeon, of extensive country practice, has informed us that in the early part of December of last year, before the setting in of the intense cold weather which marked the close of the month, he was called upon to castrate forty-three young sheep—hoggets—and that he performed the operation in the same manner as he had ever been accustomed to do, and without any noticeable accompaniment.

On the following morning, the shepherd found two of the animals dead and others severely ill, in consequence of which his attendance was again sought, and before his arrival in the afternoon twelve more had died. On instituting a *post-mortem* examination, he found that death had resulted from sphacelitic inflammation, which had commenced in the spermatic cord, and extended from it to the contiguous parts, and also into the abdominal cavity.

The remaining animals were slaughtered and disposed of, as they were in fair condition, it being feared that some of these might also be attacked. He was unable to throw any light on the cause of this fatality, even after the most searching inquiry.

PREVALENCE OF ECZEMA EPIZOOTICA.

DURING the last few weeks, the so-called "mouth and foot disease" has prevailed to a very serious extent among the cows in many of the London dairies. Several animals have died from irritative fever, deep cellular abscesses, &c., but on the whole the deaths have not been very numerous. Great numbers, however, have been rendered useless for milking purposes, in consequence of severe attacks of mammitis, both as concomitants and sequelæ of the malady, thus taxing to the utmost the ability of the proprietors to furnish the required supply of milk to their customers. It is a fact of great pathological value that not only have *secondary* attacks occurred in several of the animals, but even *tertiary* in some few of them.

A NEW SUTURE NEEDLE.

A NEW suture needle has been invented by Professor Eve to carry wire or silk, principally the former. It is a hollow needle, with an aperture just before its point, upon the inner or curved surface, for the egress of the wire, after the edges of the wound have been punctured by the needle. It is mounted upon a handle. The lower end, or eye, has the opening for the wire upon its under surface, so that the needle is thrust through the parts. The wire being straight, with its point within the needle, is now pushed a short distance through, and the needle is withdrawn, leaving the wire in its place. It is now cut off, so as to leave an end protruding from either edge, and twisted or bent, as the case may require, care being taken to prevent the sharp ends from wounding the surrounding parts. Platinum wire would prove better than silver, which is commonly used, from its being softer and less resisting. It is a simple and ingenious improvement on the ordinary needle.—*American Journal of Dental Science.*

CHLORIDE OF ZINC WITH GUTTA PERCHA. A NEW ESCHAROTIC.

M. Sommie, in the *Bulletin de Thérapeutique* for June, recommends chloride of zinc in cylinders as an escharotic, to be prepared in the following manner:

Gutta percha is first softened with boiling alcohol, and then incorporated in a warm porcelain mortar with an equal portion of chloride of zinc in a fine state of division. The mass is then rapidly rolled out on a porphyry slab, in the manner of making pastilles. The cylinders should be made of the size of a quill, and divided into portions of several lengths, and kept in wide-mouthed bottles with a little powdered chalk. The advantages of this preparation are, that it does not liquefy on exposure to the air, and is much more manageable than the chloride of zinc.—*Pharmaceutical Journal.*

SOLUBILITY OF STARCH IN COLD WATER.

Whether or not starch, properly so called, is soluble in cold water, seems doubtful, but, at all events, when potato starch is triturated for a long time in a pestle and mortar, with a small quantity of water, or is rubbed for a shorter time with quartzoze sand, and a little water, and then more water is added, a solution is obtained which gives an intense blue colour with iodine. Before the iodine is added, the mixture should be allowed to repose for twenty-four hours, and then the clear liquor should be decanted and filtered through Swedish paper. The solution so obtained is perfectly clear, and the microscope shows no trace of matter in a finely-divided state. The starchy matter must therefore be perfectly dissolved. The blue colour produced when iodine is added disappears when the liquid is heated, and reappears on cooling. No deposit of iodide of starch is obtained on standing. Basic acetate of lead gives a voluminous white precipitate with the solution, just as with solutions of gum; the neutral acetate does not. Baryta water gives a white precipitate. Fehling's cupro-potassic solution is reduced in the cold. Nitrate of protoxide of mercury, chloride of gold, perchloride of iron, and sulphate of copper, do not produce any precipitate. Delffs supposes that the matter dissolved must have the same composition as starch, $C_6H_5O_5$, or must

be represented by a multiple of this formula, inasmuch as it may be found contained in the starch, properly so called, in variable quantity, without altering its composition. He thinks, further, that it serves for the formation of starch, which, like all organised bodies, grows by intussusception; it may arrive by endosmose to fill the starch-cells, and there undergo an isomeric change which renders it insoluble, like the outer and older layers of the starch-globules. For these reasons, he proposes to call this soluble matter *amylogene*.

THE MODERN SYSTEM OF HORSE BREAKING.—DISPUTE AS TO THE ORIGINATOR.

An action, for 100,000 dollars damages, has been commenced in the Supreme Court of New York, by Denton Offutt, of New Orleans, against John S. Rarey, the famous "horse-tamer," for an alleged violation of a contract.

Mr. Offutt claims that he is the originator of the new system, and that, in the year 1850, he taught it to Rarey, who bound himself in the penalty of 50 dollars for each case in which he should impart the secret to any other person; that he gave Rarey a book of the system, which he (Rarey) has since republished, and has further violated the contract by imparting the secret of the system to divers persons in Europe and in the United States.

IMPORTATIONS OF FOREIGN STOCK.

During the months of January and February of the present year there have been imported into England, and sold in metropolitan markets,

Beasts.	Sheep.	Calves.	Pigs.	Total.
3124	6956	1286	27	11,993

In the corresponding months of last year, the total importations amounted to 13,778, showing an excess of 3778.

THE VETERINARIAN, APRIL 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —Cicero.

THE EXTENSION OF PLEURO-PNEUMONIA IN AUSTRALIA.

In the *Melbourne Argus* of December 24th, 1860, just received, we find some interesting particulars relating to the progress of pleuro-pneumonia in Australia. The energetic means which were had recourse to by the Government, and which were lately reported in our journal, appear to have failed in extirpating the malady, although its more rapid extension was thereby greatly checked.

From this circumstance it is much to be feared that the disease has here taken, as in America, too deep a root, and is too widely spread, to be entirely removed even by the legislative measures which are about to be adopted, and that for many a year the malady will continue its destructive ravages; thus blighting the hopes of those enterprising agriculturists who have sought a new home in a far distant clime, with a view to a better employment and a more secure return for their skill and capital.

The great extension of this disease is one of the most remarkable facts in connexion with the maladies of cattle of the present age, and it now bids fair to establish itself in every part of the civilised globe. The annual loss which our own country sustains is immense,—its precise amount will perhaps never be ascertained,—and, unfortunately, such loss is likely to continue, despite of anything which, as a means of *cure* of the disease, can be had recourse to.

If legislative enactments have been neglected by us, as preventives, so likewise have sanitary measures, and the application of the principles of science. Were the latter more generally adopted, the ravages of the malady might be arrested in many a herd. This fact is daily forcing itself upon our notice with increased power, and it is one to which the agriculturists cannot give too great heed.

Sincerely do we hope that our gloomy anticipations with regard to Australia may not be realised; but long experience of the disease leads to the conclusion that they will, unless preventive measures, built on a scientific basis, are conjoined with those of the legislature.

The writer of the article on "*Agriculture and its prospects*," from which we quote, after describing the state of the crops, of the country, and the character of the weather, which he says was wet beyond all precedent, goes on to observe:

But these untimely rains have not been an unmixed evil, for they have prolonged the period of a continuance of good feed for stock, and there is little fear of the present plentiful supply of good meat falling off during the summer. The grass has everywhere taken a strong, fresh growth, and the ground is so well saturated that the bush fires will be late, and not, most probably, very extensive, and where they do occur will be quickly succeeded by fresh herbage. In this the stock-owners have one great advantage just now, which can be fully enjoyed by those who have confined their attention to sheep, but is qualified to the owners of cattle by the great risk they run of having *pleuro-pneumonia* very shortly amongst their herds. Notwithstanding the spirited efforts made by a few of them when this disease first appeared here, it has spread over a rather large extent of the thickly-settled country near Melbourne, and may possibly be even now on some of the large runs of the interior. As to whence we received it, and how it has been spread here, there can be no doubt. An imported shorthorn cow brought it from England, although she was, to all appearance, sound when put on board ship, and during the whole of the passage. On inquiry, however, after the mischief was done, it turned out that this cow had a slight attack some two years previously, of which she was declared at the time to be perfectly cured; but the cure was but temporary and apparent, and the disease broke out in her here in a more virulent form, quickly spreading to the other cattle on the same farm. Had an Act been then passed by the Legislature to authorise the inspection of all suspected cattle, the care of a few weeks or months, and the expenditure of a small sum of money, would have eradicated the disease for the time, and a strict examination of all such as are imported, and the requirement of proof that they had never been affected, would have kept the country free from it; but our legislators were not alive to the

danger; and when the Act is passed, which will be, we presume, immediately after the meeting of Parliament, the task of eradication will be a difficult and most expensive one. Among the cattle lately destroyed in a diseased state have been several working bullocks, belonging to carriers engaged in carting supplies up the country, and bringing down wool and other produce as return loading; and in no other way could the contagion have been more quickly disseminated, mixing, as such teams do, at every stopping-place with other bullocks similarly employed, and frequently with the cattle belonging to the different localities through which they pass. Scarcely is one small herd destroyed now before fresh cases are reported, each one showing but too plainly the wider spread of the disease, and giving more reason to fear the announcement, at any moment, of its having broken out in one or more of the large herds, when good-bye to the hope of eradicating pleuro-pneumonia. Already have some of the stock-owners taken alarm; and this, coupled with the fear of cattle remaining at low prices, while unbroken horses are almost unsaleable, has caused a greater demand for breeding ewes than has been known for some years past. Sheep are in high favour again, in the belief that wool will pay better, and with more certainty, than meat or ordinary light horse stock. On Friday last several of the shorthorns imported by the 'Copenhagen' were offered by auction, but only some were sold. Of the bulls, Mark Antony fetched £210, and Jason £150; and of the cows, Harmless fetched £120, Landlady £100, and Merrythought £75—prices that will probably cover expenses, but certainly not such as are calculated to induce much speculation in this direction. The Prince of Prussia arrived by the same vessel in good condition, and was almost immediately forwarded to his owner's station.

THE INSPECTORSHIP OF THE METROPOLITAN CATTLE MARKET.

We learn, with much satisfaction, that the choice of the "Markets Improvement Committee" has fallen upon Mr. George Tegg, jun., *vice* Nice, resigned, who conducts an extensive and old-established practice at Stamford Hill, not far distant from the market.

Mr. Tegg passed his examination in 1844, and throughout his professional career has given his attention to the maladies of other animals, as well as the horse, so that he is eminently fitted for the new duties imposed upon him.

In our last number we stated that several of the candidates were of equal merit, and, as this was but an honest and proper rivalry, so we were convinced that the one who proved successful would receive the congratulations of his competitors as well as those of others. We feel assured that such is now the fact.

PROMOTIONS IN THE ALFORT SCHOOL.

By virtue of a decree of the Minister of Agriculture, M. Raynal, *Chef de Service* at the Alfort School, has just been appointed Professor of Pathology, Therapeutics, and Sanitary Police, in the place of M. Delafond, who has been promoted to the office of Director of the School.

Extracts from British and Foreign Journals.

ON THE SACCHARINE FUNCTION OF THE LIVER.

By George Harley, M.D., F.C.S.

Although it is now nearly two hundred years since our countryman, the celebrated Dr. Thomas Willis, made the important discovery of the occasional presence of sugar in the human urine, it was not, until very recently, known that the formation of saccharine matter is constantly going on in the healthy animal body.

Since Bernard, in 1848, communicated to the French Academy the discovery of the saccharine function of the animal organism, physiologists in all countries have more or less directed their attention to it. For a time various opinions were held by different observers regarding the origin of the sugar found in the body; but at length it was generally admitted that the liver had the power of forming a sub-

stance to which Bernard gave the name *Glucogen:* that this peculiar substance was transformed into sugar; and that the sugar in its turn disappeared in the capillaries of the different organs and tissues of the body.

In the summer of 1858, however, Dr. Pavy read a paper on the "Alleged Sugar-forming Function of the Liver," before the Royal Society, the object of which was to prove that the presence of sugar in the animal economy is "due to a post-mortem occurrence;" that as long as life continues, glucogen only is to be found, and not until after death does the transformation of this substance into sugar begin.

The question of the saccharine function of the liver being a subject to which I have more or less directed my attention since 1853, when I communicated to the *Société de Biologie de Paris* an account of an experimental procedure whereby diabetes can be produced artificially in animals, the above-mentioned paper was to me one of peculiar interest. The conclusions of the author were so much opposed to the results of my own experiments, as well as those of other observers, that I felt anxious to test them.

Accordingly, having received the kind offer of Professor Sharpey's co-operation, I undertook a series of experiments, the results of which I beg the honour of communicating to the Royal Society.

As the experiments performed were merely a repetition of some of those made by previous inquirers, I shall not enter into detail further than is necessary to explain the precautions adopted with the view to avoid error. And, looking at the object in view, it will readily be understood why in the present instance the tests employed for the detection of the sugar were limited to caustic potash with and without sulphate of copper. The mode of proceeding was as follows:—In testing the blood, a quantity of distilled water, equal to about four times that of the blood used, was boiled in a capsule. To the water, when boiling, were added a few drops of acetic acid, and afterwards the blood was very gradually introduced. In order that the albumen might be thoroughly coagulated, a drop or two more of acetic acid were added, care being taken to avoid an excess. When the albumen was completely coagulated, which was known by its separating and floating in the clear liquid, the whole was thrown on a filter. The clear filtered liquid was then tested. The same process was followed when operating on the liver.

The first point to be ascertained was whether, under

favorable circumstances as regarded diet, sugar could be found in the circulation. The following experiment proved this:

Exp. 1.—From the carotid artery of a rough terrier dog, three hours after being fed on bread, milk, and boiled liver, a portion of blood, equal to about three fourths of an ounce, was withdrawn. This, on being treated in the manner explained, gave distinct evidence of the presence of sugar. A second portion of blood, after standing thirty-five minutes in a room of moderate temperature, yielded a similar result.

As in this instance a few seconds elapsed between the withdrawal of the first portion of blood and its treatment with the boiling acidulated water, and as it was possible that in these few seconds the sugar might have been formed from the glucogen present in the circulation, we (Professor Sharpey and myself) thought it advisable in our next experiment to allow the blood to flow directly from the artery into the boiling mixture, and thereby avoid the possibility of sugar being produced by the transformation of glucogen after the removal of the blood from the body. It was further desired to operate on an animal in what might be considered its natural condition as to food. Accordingly one that had been running at large was selected, and the following experiment performed:

Exp. 2.—Into the left carotid artery of a small cocker dog was inserted a canula with a stopcock. The animal was then placed so as to allow the blood to flow directly into the boiling acidulated water. The clear filtered liquid from this blood became of a yellow tint on being boiled with soda, and gave a red precipitate with the sulphate of copper and potash, thereby indicating the presence of sugar. Two ounces of blood from the same animal were similarly tested after the blood had stood twenty-four hours in a room of moderate temperature, and the result obtained was the same as with the first portion.

The next experiment was made on an animal under conditions, as regards food, unfavorable for the production of sugar. In order, too, to avoid any chance of injuring the sympathetic nerve during the operation, and thereby favouring the formation of sugar in the body, the blood was withdrawn from the right femoral artery instead of the carotid. The following are the particulars of the experiment:

Exp. 3.—A good-sized dog was fed solely on flesh during four days. Three hours after the last meal, which consisted of half a pound of boiled horseflesh, an ounce and a half of

blood was permitted to flow from the femoral artery directly into the boiling mixture. The solution obtained from this blood, as in the other cases, contained sugar. Another portion of blood, after standing three hours, was tested in the same way, and, as far as could be judged by the eye, contained a similar proportion of sugar.

In neither of the preceding cases was the amount of sugar in the blood quantitatively determined, as I had already done so on many previous occasions; and I knew that in healthy arterial blood it varied according to the state of the digestion, and the kind of food, from an inappreciable quantity up to 0·24 per cent.*

Having been now satisfied that sugar is to be found in the blood of healthy animals at the very moment of its withdrawal from the circulation, even when none has been introduced along with the food, we next proceeded to test the grounds upon which it had been asserted that glucogen is not transformed into sugar in the healthy liver during life.

In the paper already referred to, Dr. Pavy stated that the sudden abstraction of heat from the liver after its removal from the body checks the transformation of the sugar-forming material, and thereby enables us to operate on the hepatic substance while in the same chemical condition as during life. The plan he recommends is to sacrifice a dog by pithing, and instantly to slice off a piece of liver, and throw it into a freezing mixture of ice and salt. In which case, he says, the absence of sugar is almost complete, and thence concludes that the presence of sugar in the liver can no longer be looked upon as a "natural *ante-mortem* condition;" but "is in reality due to a *post-mortem* occurrence."

In the following experiments, not only was the plan recommended most scrupulously followed, but even the risk of the glucogen in the liver becoming transformed into sugar during the process of preparing the decoction was avoided, by cutting the frozen liver into thin slices, and allowing them, while still in that condition, to fall directly into the boiling mixture of acetic acid and water. The liver was in this way prevented from thawing until it entered a medium as capable of arresting the transformation of its glucogen into sugar as the cold. The decoction so obtained might therefore be presumed to contain the soluble matters as nearly as possible in the same chemical state as they were in the living organ.

* On the Physiology of Saccharine Urine, by Geo. Harley, M.D., 'British and Foreign Medico-Chirurgical Review,' July, 1857, pp. 191-204.

Exp. 4.—A small, but full-grown dog was fed during fourteen days solely on animal food. Four hours after a meal of boiled horseflesh he was killed by section of the medulla oblongata. The abdomen was rapidly opened, and a portion of liver cut off and instantly immersed in a freezing mixture of ice and salt. A second portion of liver was as speedily as possible detached, and quickly washed in cold water. The latter portion was then, without loss of time, cut into fragments, which were allowed to fall directly into boiling acidulated water. On testing the clear filtrate, distinct evidence of the presence of sugar was obtained. After half an hour, the frozen portion of liver was taken, without being allowed to thaw, and sliced directly into the boiling water with acetic acid. The clear liquid yielded in this case as distinct evidence of sugar as in the other. Forty minutes after the death of the animal, another portion of liver, which till then had remained undisturbed in the abdomen, was treated like the others. This gave evidence of containing a much greater quantity of sugar, thus confirming Bernard's statement, that the transformation of glucogen goes on in the liver, after its removal from the body, or after the death of the animal.

In order to be perfectly certain that the sugar found in the liver at the instant of its removal from the body was really formed where it was found, and not carried there by the portal blood from the food, the following experiment was performed:

Exp. 5.—A dog was fed during ten days on boiled tripe. Twenty-two hours after the last meal the dog was pithed. In less than twenty seconds, a portion of the liver was in the freezing mixture of ice and salt. While I boiled directly another portion of liver, Professor Sharpey put a ligature on the portal vein, and collected its blood. He likewise collected some of the hepatic blood which flowed from the cut liver.

In the portal blood not a trace of sugar could be detected. The hepatic blood, on the other hand, gave distinct evidence of its presence. Both bloods were tested exactly alike. The clear liquids obtained from the frozen liver and from the portion treated directly, notwithstanding that they were filtered while hot, and also tested while still hot, both gave distinct evidence of sugar. On the following day, a second portion of portal blood, which had been purposely kept all night in order to ascertain if, on standing some time, sugar would form in it, still yielded the same negative result. Even after treating it with saliva, which would have transformed its glucogen into

sugar, had it contained any, no evidence of the presence of sugar was obtained. On the other hand, when saliva was added to the decoctions of the liver above spoken of, a great increase in the amount of sugar was observed. The quantity of sugar so obtained did not appear to be so great, however, as that yielded by a portion of the liver which remained all night untouched in the abdomen of the animal.

Professor Garrod, F.R.S., who was present, not at the commencement of the experiment, but on the following day, when the different decoctions were tested, agreed with Professor Sharpey and myself, that this experiment showed the truth of Bernard's statement, that the liver might contain both sugar and glucogen, when the portal blood contained neither.

The stomach and intestines of this animal were found void of food; the large intestine only contained fæcal matter.

For the sake of still further assurance that the sugar found in the liver was neither due to some accidental cause, nor immediately derived from food, we determined to deprive an animal of food for some days before examining the liver. The following experiment was accordingly performed:—

Exp. 6.—A very large and powerful dog, in admirable condition, was subject to a rigid fast for seventy-two hours—three full days. Immediately after death, by section of the medulla oblongata, a portion of the liver was sliced off and immersed in ice and salt. Blood was then collected from the following sources:—

1st. From the portal vein.

2dly. From the liver (*i. e.*, blood which flowed from the liver when a portion of it was sliced off).

3dly. From the right side of the heart.

4thly. From the aorta.

5thly. From the inferior vena cava.

Although these bloods were all treated in a similar manner, and tested with the same quantities of copper and soda, yet none of them gave unequivocal evidence of the presence of sugar, except that from the liver. The blood from the right side of the heart gave doubtful evidence. At first sight it may appear strange that the blood from the right side of the heart should contain scarcely any appreciable quantity of sugar, while that of the liver showed its presence very obviously; but this no doubt arose from the hepatic blood being in great part prevented from reaching the heart; 1st, on account of most of it escaping into the abdomen, when the portion of liver was cut off; and 2dly, on account of its flow being in great measure arrested by the ligature of the portal vessels.

All the bloods, except the hepatic, seemed to be free of glucogen as well as sugar; for none of them, with that exception, gave any evidence of its presence after being treated with saliva in the usual way.

On examination of the frozen liver (after three hours), which, in the other cases, was not allowed to thaw before being put into boiling water, the decoction was found to reduce the copper readily.

On opening the stomach, nothing was found in it except some neutral mucus. The intestines were equally destitute of food, and in the rectum only a very small quantity of fæces was found; so there could be no doubt as to the animal being in a fasting condition.

The only point now remaining was to determine quantitatively the increase in the amount of sugar in the liver after its removal from the body, and for that purpose we preferred operating on an animal fed on a mixed diet.

Exp. 7.—A small dog, which had been previously fed on animal diet, received a full meal of bread and milk. Five hours afterwards the animal was pithed, and a portion of the liver rapidly sliced off, and immersed in a freezing mixture. A ligature was placed on the portal vein, and its blood collected before the circulation had ceased.

On examination, this blood was found to contain a small quantity of sugar, derived no doubt from the food. Bernard, I believe, has erred in supposing that all the saccharine matter found in the animal organism is formed out of the glucogen produced in the liver. This, no doubt, is the case in the carnivora when the diet is restricted to food inconvertible into sugar in the alimentary canal, but cannot be regarded as the natural state of things either in the omnivora or herbivora; for the food of the latter not only contains sugar, but its amylaceous elements may be converted into that substance in the process of digestion. The sugar found in the bodies of animals fed on a mixed diet ought therefore to be regarded partly as the direct product of the food, and partly as derived from the glucogen formed in the liver.

Bernard's chief argument against this view is founded on the fact that the livers of dogs fed on a mixed diet contain no more sugar than those fed on purely animal food. In my opinion, however, this fact is not sufficient to decide the question; for, as the liver does not store up sugar, the quantity it at any time contains is no criterion of the amount produced in it. Moreover, the sugar derived from the food need not be expected to be found in the liver. Had Ber-

nard gauged the sugar present in the blood, instead of that in the liver, after each kind of diet, the result obtained would, I believe, have led him to a different conclusion. This being a point of great practical importance in the treatment of diabetes, I may be here permitted to mention that I have occasionally found nearly twice as much sugar in the blood of an animal on a mixed, as in that of one feeding on a purely flesh diet.

To return to the last experiment. About two hours after the death of the animal, portions of the frozen part of the liver, and of that which had been kept warm in the body of the animal were carefully weighed, and the proportions of sugar they respectively contained estimated by volumetric analysis.

The portion of frozen liver was found to contain 0·333 per cent., and that of the other 1·55 per cent. of saccharine matter. It is thus seen that in two hours the sugar in the liver had augmented nearly five-fold. As Bernard has shown, the simple washing out of the liver by passing a stream of water through its vessels, would remove all the sugar anteriorly formed. On placing it again aside for a short time, a fresh portion of sugar would form in it at the expense of the glucogen.

0·333 per cent. of sugar seems a small quantity; but if we suppose a liver weighing, as in man, not less than fifty oz., to contain 0·333 per cent., above 70 grs. of sugar would be present in it at the moment of death—no very insignificant quantity, when it is recollected that sugar is removed from the liver with every pulsation of the heart, to be partly consumed, and that it is as continually supplied by the organ.

The results of the experiments now related do not therefore in any way countenance the notion that sugar is not produced in the healthy animal body. On the contrary, such conclusions as they afford are altogether in favour of the generally received views upon the subject.

From the preceding experiments the following conclusions may be drawn:

1st. Sugar is a normal constituent of the blood of the general circulation.

2dly. Portal blood of an animal on mixed diet contains sugar.

3dly. Portal blood of a fasting animal, as well as of an animal fed solely on flesh, is devoid of sugar.

4thly. The livers of dogs contain sugar, whether the diet is animal or vegetable.

5thly. Under favorable circumstances, saccharine matter may be found in the liver of an animal after three entire days of rigid fasting.

6thly. The sugar found in the bodies of animals fed on mixed food is partly derived directly from the food, partly formed in the liver.

7thly. The livers of animals restricted to flesh diet possess the power of forming glucogen, which glucogen is at least in part transformed into sugar in the liver—an inference which does not exclude the probability of glucogen (like starch in the vegetable organism) being transformed into other materials besides sugar.

8thly. As sugar is found in the liver at the moment of death, its presence cannot properly be ascribed to a *post-mortem* change, but is to be regarded as the result of a natural condition.—*Transactions of the Royal Society.*

VIVISECTIONS.

From the "Appendix" to the Report referred to in our last number, we extract only such matter as has not previously appeared in our journal. We are, nevertheless, gratified at its reproduction by the Society, and shall sincerely rejoice if so be we have by co-operation, however feeble, been instrumental in bringing about that at which every humane mind must exult, the prevention of unnecessary cruelty to the lower animals.

Extract from a speech made by one of the distinguished Vice-Presidents of the Paris Protection Society at its general meeting in October last, when that Report was submitted for consideration. On that occasion the Marquis de Montcalm-Gazon asked "what had the majority of the Commission on vivisection done? Conceded everything in favour of experiments, and refused everything to protection.

"To our earnest and repeated request for a limitation of vivisection, we have received nought but an evasive reply, briefly comprehended in that little word, so often the bearer of a refusal, '*Impossibility.*' The report, by its silence, peremptorily denounces all desire to have the abuses of vivisection suppressed. A number of our fellow members, perhaps the majority amongst us, desire most ardently to see them done away with. On this ground I feel compelled to oppose both the tenor and the resolutions of the report.

"How can we gravely protest against overloading and overdriving, if we do not on an occasion like the present raise our voices against the horrible torments inflicted on animals, I will not say by real anatomists, but by bunglers, apes of science, or by amateurs, deadened to the sight of pain. My

opinion is, that whenever that day arrives, that we cease to protest against the abuse of viviseetion, and take 'scientific experiments' as our pass-word, we may as well break up and take leave of each other. Public opinion will and does already demand of us, that we call on the public authorities to make a distinction between vivisections which are really necessary to science, and those thousands of tortures inflicted on the brute creation, without any tangible reason.

"This distinction once made, the next step should be to attempt to humanise such as contemplate vivisection with a kind of brutal delight, and in case of need to bring such to justice as will not be deterred by persuasion. But here we have a report and resolutions, passed in the name of a majority of the Commission, which admit of no desire for legislative enactments, either for suppressing or curtailing the abuses of vivisection."

Extract from a sermon, preached at the new parish church of St. Mary' Stoke Newington, and afterwards at one of the Protestant chapels, Rue d'Aguesseau, at Paris, in the month of May last. By Thomas Jackson, M.A., Rector of Stoke Newington, and Prebendary of St. Paul's:

"Could the autobiography of a London horse be written, what a tale of misery would it often disclose! The records of our police-offices contain narratives of barbarity long continued and ingeniously concealed, with the bare recital of which I dare not harrow the feelings of my hearers. The plain moral to be learned from them is, that you and I ought never to hire or ride in vehicles which are dragged by maimed, wearied, and half-starved animals. Were this simple rule always observed, our eyes and sensibilities would be less frequently afflicted by them, and the very lust of gain would force the proprietors to a better policy and a more liberal treatment of the poor, silent animals, whom at present they so wilfully torture.

"But of all horrible mutilations and abominable pangs inflicted upon the animal creation, those which are done in the name of anatomical and surgical science are at once the most fearful and revolting, and the most plausibly defended. Even the monsters in human shape who nailed a living dog by his four paws to a table, and then dissected him alive; and those who, having fastened a horse so that he could not stir a limb, then began, some to open his chest, some to saw into his skull, some to probe the interior of his eyes, some to pare away the muscles in slices, and some to apply red-hot irons to the brain, have found apologists! The most degraded savages of Ashantee, maddened by a feast on human blood, have never condescended to outrages so eccentric and so refined, as the modern physiologists of Paris, in their cool hours of study; and, it is to be feared, in some cases, until recently, the students of anatomy in the capitals of England and Scotland. The tender mercies of these wicked men are indeed cruel! The excuses for such viviseetion are founded on the assertion, that important physiological facts are ascertained by the practice; and that operations on living subjects in a state of disease are thereby rendered less painful. But, on the other hand, it is argued, by eminent anatomists, that such physiological facts having been once ascertained, the fearful operation need not be repeated; that far more is to be learned by the careful study of disease; and that most of the inferences deduced from such experiments are entirely fallacious, the pain which accompanies them interfering with the proper play of the functions of the animal on whom they are made.

"But enough has been said of the moral causes of these cruelties in their manifold variety and extent. We gladly leave the negative view of the question. We turn from the spectacle of torture, and the cries lifted up to heaven, which too few on earth regard, to consider the positive announcement of the text, 'The righteous man regardeth the life of his beast.' He

is the diligent student of the animals under his care. He 'regardeth their life,'—its unfathomable sources, its manifold operation. He imitates the ancient poet and moralist of Edom, as he exclaims, amidst the devout contemplation of the teeming opulence of this life, 'Ask now the beasts and they shall teach thee, and the fowls of the air and they shall tell thee, ... and the fishes of the sea shall declare unto thee; who in all these knoweth not that Jehovah made them, in Whose hand is the soul of every living thing."

VIVISECTION IN FRANCE.

From Mr. Goodwin, M.R.C.S., Veterinary Surgeon at Hampton Court Palace, dated January 15th, 1861:

"*To the Editor of Bell's Life in London.*

"SIR,—I call your serious attention to the excellent letter of Sir John Scott Lillie, for it really behoves every man to make an effort to put a stop to the most outrageous cruelties perpetrated in any country. In my time I have performed, and assisted others in performing, every kind of operation that a veterinary surgeon can be called upon to undertake, but I did not acquire the knowledge which led me to perform them successfully by butchering living animals. It is sickening to reflect upon the torture of some poor old horse, bound and helpless, moaning and groaning under the cuts and thrusts of the knife into every sensitive part of his body by some untutored wretch in the shape of a student. Fortunately, here, for our poor patients, in all operations we subject them to, it is our study to render their pangs as transitory as possible.

"Surely the influence of the Count de Morny and of the members of the French Jockey Club might be exercised to bring before the Emperor barbarities which are disgraceful to the inhabitants of a civilised nation. For many years I witnessed most of the operations performed in our metropolitan hospitals before chloroform was employed, and in my connection with the first surgeons of the day I never heard of one practising upon living animals to learn to operate—their dexterity was acquired in the dissecting-room upon the bodies of the dead. It is a very general opinion that, to be a good surgeon, or rather a good operator, one must not have too sensitive feelings; for myself, I can say that, familiarised as I have been with operations on man and horse of every description, I shudder to think of the sufferings of an animal under living dissection."

In addition to the evidence adduced in the foregoing Appendix against the practice of vivisection, this Committee might refer to certain passages in the Report of the Paris Commission, to prove the necessity of legal powers to interdict, at all events, the abuses of that practice. That passage for instance in which it is stated with reference to "its alleged benefits to mankind:"

"But to deserve this approbation, the science of vivisection must be strictly maintained within the limits of this noble aim. It must be regarded solely as the means of verifying by experiment a hypothesis circumscribed beforehand, so as to limit the sufferings of the living creature upon whom they are necessarily imposed, to the bare research of the solution of the difficulty under consideration. Beyond such limits, the question of cruelty begins, inasmuch as it is at this point that commences the gratuitous infliction of pain, the absence of utility. Vivisection can only be exercised with morality when its object is the pursuit of new discoveries, of course, in the silence and solitude of the laboratory, and under those certain conditions

wherein the will of operator masters the experiment, instead of allowing the experiment to master his will."

To which we might add the following passage with which that report concludes:

"But in the same degree that we feel bound to approve the practice of vivisection when pursued for the exclusive advancement of science, that is to say, with an object limited beforehand, whose just pursuit is sufficiently established by the usefulness of the research; so are we compelled to declare ourselves averse to the unrestrained practice of torturing, sometimes gratuitously inflicted upon poor dumb brutes by inexperienced hands, who torture without any fixed purpose. These tortures have never been turned to any other account than by provoking unexpected manifestations, which serve to build up artificial theories, only made to be overthrown by the experiments of wise and judicious practitioners."

When such a decided disapprobation of the abuses of vivisection has been thus expressed in that report, this Committee, while it does not admit the necessity of this practice on the alleged grounds of "*its utility to mankind*," in the face of evidence proving the contrary to be the fact, cannot but anticipate the co-operation of the framers of that report in an endeavour to obtain legal powers for the interdiction of the *useless tortures* they have thus adverted to, and which are so repulsive to all feelings of *Humanity*, *Christianity*, and *Civilisation*.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The Annual Report from the Governors of the Royal Veterinary College.

The Governors of the Royal Veterinary College, in accordance with annual custom, have again the satisfaction of presenting their report relative to the state of veterinary medicine, and the means which are at their disposal to further its application to the wants of the agricultural community. During the past year, the lectures on the diseases of cattle, sheep, and pigs, have been uninterruptedly delivered, and the daily attendance of the pupils has been fully equal to that of any former year. Examinations to test the proficiency of pupils have been from time to time instituted, and from the reports which have been furnished to the Governors by the professors, they believe that the progress of the pupils, in the several departments of their studies, has been very satisfactory. To second the labours of the professors, and to stimulate the pupils in the acquirement of knowledge, the Governors, early in the year, arranged for the application of certain funds, placed at their disposal by the late Professor Coleman, to the awarding of medals of silver and bronze, and a certificate of merit, as honorary distinc-

tions of the first, second, and third class, to such pupils as should be the authors of the best essay on a selected subject of veterinary medicine. The subject chosen for the competition was, "The Eye of the Horse; embracing its anatomy and physiology, the laws of light appertaining to vision, the chemical composition of the humours, and the pathology, treatment, and results of the disease known by the name of constitutional ophthalmia."

The conditions were—1st. That the essayists should write within the College, and that the time be limited to three hours a day, for six consecutive days. 2d. That their papers should be in the custody of the Demonstrator of Anatomy. 3d. That no reference to books would be allowed. 4th. That each paper should be superscribed with a motto, and be accompanied by a sealed envelope bearing the same motto, and containing also the name of the writer.

The successful essayists were: Mr. Francis Talbot Sharp, Nottingham, *Silver Medal;* Mr. George A. Oliphant, Marshwood, Southampton, *Bronze Medal;* Mr. William Barker Walters, Birmingham, *Certificate of Merit.*

Although an important malady affecting the horse was thus first chosen, such being in accordance with the wish of the donor, it is the intention of the Governors in future years to select in turn a subject in connexion with the pathology of cattle, sheep, and other domesticated animals; as also upon chemistry and materia medica.

Communications and Cases.—It is a source of much gratification to find that an increased number of communications, seeking advice for the management and treatment of diseased animals, has been received from the members of the Society, and also that a great many morbid specimens have been forwarded from different parts of the country, thus affording increased facilities for the students to become practically acquainted with cattle pathology, at the same time that the principles of the science are being expounded to them in the lecture-room. The benefit which must result from the continuous adoption of this plan cannot be too highly estimated, as it is an assurance to the agriculturist that those pupils who daily enter on the practice of their profession, as graduates of the College, are equally well informed on the nature and treatment of the diseases of cattle and sheep as they are of those of the horse. The Governors have long seen the advantages resulting from this co-operation on the part of the members of the Society, and which they view as second only in importance to their obtaining the personal attendance of the Professor of Cattle Pathology on cases of disease which may assume a more urgent type. Hence in former reports

they have not failed to direct special attention to this subject, as well as to urge such a modification of the Society's rules which apply to the obtainment of the professor's services, as to lead to their being simplified; and they learn with great satisfaction that their recommendation has not only been entertained by the Council, but that in due course it will be carried into practice. A very limited number of cattle and sheep have been received into the infirmary for treatment, and the Governors cannot help reiterating their surprise at the apathy which prevails so generally among agriculturists to avail themselves of the privileges they possess in this respect as members of the Society.

Annual Meeting.—At the meeting which took place at Canterbury both Professor Spooner and Professor Simonds were in attendance as veterinary inspectors, and the Governors have observed with very great pleasure that in this effort of theirs to render benefit they have succeeded to the satisfaction of the Society. The rigid examination to which all the animals are now subjected is gradually lessening the number of incorrect returns with reference to their age, and correcting also the abuse of sending for exhibition those which are the subjects of hereditary disease. The examination of the horses has, however, often been less satisfactory to the inspector than he could desire, arising chiefly from the limited means at his disposal; and the Governors doubt not that, at the approaching meeting at Leeds, any increased facilities he may require, by a modified arrangement of the sheds, so as to set apart one exclusively for his use, and the supplying him with practical assistance in his investigations into the soundness of the animals, will be readily granted by the Council.

Prevalent Diseases.—Apart from ordinary diseases, the chief maladies of a serious nature which have prevailed among cattle have been pleuro-pneumonia and epizootic eczema, commonly known as "the mouth and foot disease;" while among sheep, at the early part of the year, chronic diseases of the lungs, resulting from the existence of worms (*filariæ*) within the bronchial tubes during the preceding autumn, proved very destructive. No doubt but the fatality of this disease was greatly added to by the long-continued wet weather and low temperature which prevailed. It is, however, to be feared that these same causes have had even a far greater injurious effect on the health of sheep, in producing that fatal malady which is commonly known by the name of "rot." At the present time this destructive disease is wider spread than has been the case for many years; and in several of the western counties it is to be feared, from the

recent investigations of the Professor of Cattle Pathology, that whole flocks will be sacrificed to its ravages. Little can now be done to prevent these losses, the malady being one which has had its origin in the entrance of entozoa into the organism of the sheep during the preceding summer months. In their more perfect form, these entozoa are known by the name of "flukes," and are found to be inhabiting the gall-ducts of the liver, where they not only produce functional derangements of the organ, but early lay the foundation for irremediable structural changes. The study of the natural history of these creatures opens up the only chance of preventing their attacks, and thus to save the lives of our sheep; and it is gratifying to find that investigations of this kind have long since been undertaken by the Professor of Cattle Pathology, and which are satisfactorily progressing. With reference to pleuro-pneumonia, the Governors would observe that several circumstances have shown during the past year, in a most remarkable manner, that the main cause of the spread of this disease is contagion. Such is its introduction into the United States, and also into Australia; the outbreak depending in the former country on the importation of some cattle from Holland, and in the latter on a similar importation from England. Within the past week it has also come to the knowledge of the Governors that the malady has been carried into Norway by some Ayrshire cows sent from Scotland. Facts of this kind are of the first importance, as indicating the means which should be adopted to limit its extension. Preventive measures are alone to be relied on, as the fatality attending the disease can be scarcely said to be diminished since it first made its appearance in this country, nor is it to be hoped that science can do more than she has already done in devising means of its cure. In conclusion, the Governors would again convey to the Council their fixed resolve to do everything within their power to render the science of Veterinary Medicine of increasing value to the agricultural community.—(Signed) J. W. Bosanquet, Treasurer of the Royal Veterinary College, Jan. 12, 1861.

ROT IN SHEEP.

The following report from the Veterinary Professor of his professional visit to Bridgerule, in Devonshire, was also read atthe meeting of the Royal Agricultural Society:

"On the 14th Dec., 1860, in accordance with instructions received from the Council, I visited the parish of Bridgerule, North Devon, for the purpose of investigating a fatal malady existing among the sheep in that and adjoining parishes. The application came from the Rev. S. Kingdon, the

resident minister, and an old member of the Society, who stated that 'more than half of the sheep had died, or been sent off to be slaughtered at Plymouth.'

"It was suspected that the animals were suffering from 'rot,' but a doubt existed on this point with regard to many of them, in consequence of the statements made with reference to the condition of the body after death. An investigation of the symptoms satisfied me that the disease was rot in its most malignant form, and the doubt referred to I found to have had its origin in a want of knowledge of even the most simple parts of the animal frame.

"As I found indications of the disease in all the animals to a greater or less extent, without reference to their age, and as many were ewes in lamb, I deemed it prudent to select on the different farms some for slaughtering, with a view to determine if the individual proprietors would be justified in keeping them a sufficient time to produce and rear their lambs. In every case, I regret to say, that such was the advanced state of the malady that I could not advise any other course being taken besides that of disposing of the animals at a low price as quickly as possible.

"Inquiries since made show the propriety of this course, and it will appear from a report and details of particulars, furnished by Mr. Kingdon and attached hereto, that where the recommendation was not acted on the animals are being swept daily away by death. This parish forms no exception, unfortunately, to the existence of rot among the sheep; and it is a serious thing to contemplate the great amount of loss which the country as a whole will sustain from the disease. Few districts can be found perfectly free from the malady; but especially does it prevail on wet, cold, and undrained lands.

"Late investigations into the natural history of the entozoon—the river fluke—on the presence of which in great numbers within the biliary ducts the disease depends, would cherish the hope that ere long preventive means may be adopted to limit their development, and thus save the lives of many of our sheep.—(Signed) JAMES BEART SIMONDS, Vetri nary Inspector."

ADDENDUM BY MR. KINGDON.

Bridgerule is a small parish divided into small farms. Farmers keep a few breeding ewes, and send many of their early lambs to the butcher. They buy later lambs from colder districts, and keep them round from August to April. Many do this who do not keep breeding ewes. All those in the column of the annexed table, headed "lost, or sold at a reduced price," were in a bad state. The farmers must

have lost at least one pound a head on all these, and on some from thirty to forty shillings. Fully half in the column headed "has remaining," are manifestly dying, and it is even doubtful whether there is a sound sheep left. There are larger farms in the neighbourhood, and there hundreds, instead of tens and twenties, have been lost and sold at a reduced price. Since Professor Simonds' visit there have died in this parish ten or a dozen cattle—yearlings—some of which have had their livers full of flukes, and some had the liver a mass of putrefaction. Many after this weather are finding sheep affected which they thought safe.

Name of Owner or Farm.	Lost and Sold.	Has remaining.	Total lost or sold at a reduced price.	Total original Stock.	Remarks.
Vicarage	6 hoggets	31 sheep, 12 hoggets	6	49	Several looking badly.
Tatson	11 sheep, 23 "	None.	34	34	20 hoggets sold for 6*s.* 10½*d.* a head.
Memfield	6 " 12 "	None.	18	18	4*s.* 6*d.* a head offered by the drovers for the hoggets.
Loudgeworthy	30 "	None.	30	30	.....
Tackbear	4 "	11 sheep, 21 hoggets	4	36	Another hogget condemned.
Burrough, No. 1	8 " 8 "	4 " 9 "	16	29	The 13 in almost a hopeless state.
" No. 2	7 "	21 " 3 "	—	31	The 7 sold; not much affected.
" No. 3	9 "	3 "	9	12	2 more condemned; hopes to save 1.
Knowle	None.	12 "	None.	12	.....
Littlebridge	19 sheep, 24 hoggets	None.	43	43	From this place the worst were taken to London.
Bray	12 "	None.	12	12	.....
Tiney	4 "	17 sheep.	4	21	Believes the rest to be affected.
Worthen	18 " 18 "	None.	36	36	.....
Furze	40 " 15 "	8 sheep.	55	63	Remaining 8 in a bad state.
Dun	14 "	14 "	None.	14	.....
Holladon	21 " 15 "	None.	36	36	These sheep were in a bad state, 11 died.
Church Town, Barton	32 " 14 "	2 sheep, 7 hoggets	46	55	The remainder in a bad state.
Scotland	10 "	None.	10	10	.....
			359	541	

VETERINARY INSTITUTION—ROYAL DUBLIN SOCIETY.

Lord Dunlo brought up his report on the establishment of a veterinary institution in connexion with the Royal Dublin Society. It was presented to the Council of the Society, and approved of by them, on Thursday, the 28th February last.

"Report on Veterinary Establishment, to be considered by the Council on Thursday, 28th February:—

"The Committee appointed to inquire and report on the establishment of a School of Veterinary Medicine and Surgery in connexion with the Royal Dublin Society, beg leave, in accordance with the resolution of the Council, whereby it was referred to them to inquire by what means the recommendation contained in their former report, presented on 29th November last, can be carried into effect, beg to present this their further report on the subject:—

"With regard to the establishment of a veterinary school in connexion with the Royal Dublin Society, the Committee consider the following provisions are necessary—

"1. An anatomy-house and lecture-room, with a forge.

"2. A chemical laboratory and lecture-room.

"3. An infirmary and offices attached.

"4. A museum of veterinary preparations.

"For conducting the instruction of the students, the following staff of teachers at least will be required—

"1. A lecturer on anatomy, surgery, and medicine.

"2. A lecturer on chemistry and materia medica.

"3. An anatomical demonstrator.

"The Society being already provided with a chemical laboratory in the fullest state of efficiency, and lecture-room attached, and also with a valuable collection of preparations illustrative of the anatomy and diseases of the horse, no expense is necessary to be incurred for such parts of the proposed establishment.

"Respecting the site for the erection of the necessary buildings, the Committee report that they have carefully examined the Society's premises, and are of opinion that the piece of ground adjoining Clare-lane, from its having in its immediate vicinity an efficient sewerage and an ample supply of water, affords peculiar advantages for the erection of the anatomy-house, lecture-room, and forge attached; while the infirmary, consisting of ten stalls for the reception of animals under treatment, may be readily erected on a por-

tion of the ground adjoining. The Committee have obtained a ground-plan of the buildings, which they beg to submit herewith.

"The Committee consider that the anatomy-room may be available for the examination and preparation of animals for the Museum of Natural History, and may thus become an important agent for the extension of a knowledge of comparative anatomy, not only among the veterinary students, but those engaged in the study of zoology generally.

"With regard to the staff which will be necessary for carrying out the course of instruction which may be determined on, the Committee would suggest that the lecturer on anatomy, surgery, and medicine, should appoint, under the sanction of the Society, a properly qualified person as an anatomical demonstrator; he should also attend the infirmary, and in addition to his ordinary lectures on anatomy, surgery, and medicines, should give clinical instruction in the infirmary, the management of which should be undertaken by him on his own responsibility.

"The Society having already a professor of chemistry, it will be unnecessary to provide a lecturer on this branch of education; but the Committee are of opinion that this officer might undertake to lecture on the materia medica used in the treatment of animals, a duty which the present professor is willing to undertake.

"The Committee beg to submit an approximate estimate of the cost of erection of the necessary buildings, together with the expense of the staff of officers and servants.

ESTIMATE.

Cost of buildings, according to the plan before referred to		£700 0
Lecturer on anatomy, &c., with salary of demonstrator, with management of infirmary, &c., per annum	£150	
Materia Medica, (increase of salary to present professor of chemistry)	50	
Porters	50	
Contingencies	50	
	£300	
Deduct sum available under head agricultural museum	120	
Total annual charge	£180 at 4 per cent. =	4500 0 0
Total capital required		£5200 0 0

"It is manifest from the above that the Society has at command many facilities for affording a considerable amount of education requisite for veterinary surgeons, and, consequently, could form a permanent establishment for that purpose at far less outlay than is otherwise possible. But as the Committee believe the Society has no funds available to meet the additional expense which so desirable an object would involve, and as the public mind is fully alive to the importance of an institution of the kind being permanently established in this country, the Committee strongly recommend that a general subscription be forthwith set on foot to enable the Society to carry into effect the object contemplated.

(Signed) "DUNLO."

The above report is to be brought before the next general meeting of the Society, to be held during the week of the show, commencing 2d April.—*The Irish Farmers' Gazette.*

FACTS AND FALLACIES CONNECTED WITH THE RESEARCH FOR ARSENIC AND ANTIMONY; WITH SUGGESTIONS FOR A METHOD OF SEPARATING THESE POISONS FROM ORGANIC MATTER.

By ALFRED S. TAYLOR, M.D., F.R.S.

(*Continued from p.* 171.)

It is reasonable to suppose that when this paragraph was written, Mr. Herapath had no suspicion that copper wire known as No. 13 contained arsenic, or, indeed, that in employing or recommending it for Reinsch's process, there was any necessity of testing it for arsenic. He gives explicit directions for testing the acids and zinc for arsenic, but no suggestion for testing the copper. In short, Mr. Herapath, so far as the copper is concerned, adopts no other method of preliminary examination for arsenic than that propounded by Reinsch in 1841, which has been used by all toxicologists since that date. This, it is well known, consists in boiling the polished or clean copper with the diluted acid before adding any portion of the suspected poisonous material. Having procured from three of the first London chemical dealers three samples of the wire No. 13 size. as recommended and used by Mr. Herapath, I found in each sample

a *larger proportion of arsenic* than that which existed in the copper-gauze used by Dr. Odling and myself in the Smethurst case.*

* This case drew from Mr. Herapath, in the capacity of "amicus justitiæ," a letter, which was published in the 'Lancet' of September 3d, 1859, and in most of the medical and daily journals. It condemned in strong language the use of copper containing arsenic, and suggested that all convictions which had for twenty years taken place upon the use of Reinsch's process could be only regarded as judicial murders. Let the reader consider the value of such a condemnation coming from a man who, unfortunately for his appeal to justice, had himself during sixteen years employed and recommended for Reinsch's process a strongly arsenicated copper wire! It will be perceived, by his mode of operating, too, that not satisfied with depositing arsenic on the impure copper, he directs that the deposit should be continually scraped off as it is formed, thus mixing the impure copper with the supposed arsenical deposit. In this letter, Mr. Herapath states that the *one thousandth* part of a grain of arsenic is quite sufficient, by Reinsch's process, to furnish the five proofs which he requires for scientific evidence on a charge of murder. A few grains of his No. 13 wire will, under certain conditions, yield this quantity of arsenic, which, in ignorance of its presence as impurity, an analyst might easily assign to the liquid or solid examined. Measured by his own standard, and quoting his own words, "what shall be said of the convictions and executions which have taken place during sixteen years upon Mr. Herapath's evidence, if the same impure copper has been used by him in the process of Reinsch?"

Either Mr. Herapath knew that the No. 13 wire, which he employed and recommended, contained arsenic, or he did not. If he did know it, then he deceived the public and profession by the publication of his letter; if he did know it, then, instead of acting as censor of others, he should have acknowledged with penitence his own chemical transgressions for the long period of sixteen years, and have thanked those who, for the first time, in 1859, pointed out to him the danger of the course which he was pursuing. If danger ever arises from the presence of impurities in chemicals, that danger is undoubtedly incurrred in the highest degree when a man is rashly prepared to swear to the presence of poison from the discovery of the *thousandth part of a grain!* Of Mr. Herapath's conduct and motives in this transaction, I shall only say "Quem deus vult perdere prius dementat."

I cannot close this note without, for the sake of contrast, noticing the candid and honorable conduct of an excellent chemist and eminent practitioner, Dr. Douglas Maclagan, of Edinburgh, in reference to the discovery of this impurity in copper. Before the fact of the general presence of arsenic in copper had been made publicly known by the evidence given by Dr. Odling and myself at the trial of Smethurst in August, 1859, Dr. Maclagan had conducted a series of analyses for arsenic by Reinsch's process in a criminal case in Scotland, and had arrived at the conclusion that arsenic was present in the fluids and solids of the body. This case came to trial at Inverness, some months subsequently to the trial of Smethurst. After giving his evidence, and confirming his previous report, Dr. Maclagan requested the permission of the Court to correct it, by stating that by reason of certain matters which had become public since his first analysis, he had been induced to examine the copper which he had employed in his experiments, and he found it to contain arsenic. The proportion, however, was much smaller than that which he had extracted from the liver and other organs of the deceased. He had previously tested it in the manner in

Men who should have a better knowledge of the subject, asserted that there was no novelty in the announcement of this universal presence of arsenic in the so-called purest forms of copper. The untruthfulness of this statement can only be appreciated by those who have taken pains to refer to the highest chemical authorities. It was known that arsenic was associated with the ores of copper; but there was a general belief, from the known volatility of arsenic (at 380°), and the repeated meltings which copper underwent in the process of refining (being each time heated to 1996°), that the whole of this arsenic was evolved; and that if it anywhere existed, it would be only in the coarse kinds of unrefined or commercial copper. Berzelius ('Traité de Chimie,' tome iii, p. 124), in an elaborate description of the properties of this metal and the mode of extracting it, makes no reference whatever to even the possible presence of arsenic as a contaminating ingredient in copper. Dumas, in his 'Traité de Chimie appliquée aux Arts' (tome iii, page 472, *et seq.*), in giving a complete history of this metal, speaks of its being contaminated with lead and antimony, but he does not mention arsenic as an impurity. Among other works of great chemical authority may be enumerated those of Despretz, 'Elémens de Chimie,' i, 428; 'Ure's Dictionary,' art. "Copper;" Mitscherlich,' Lehrbuch der Chemie,' ii, 187; Graham's 'Elements of Chemistry,' p. 579; Turner's 'Elements of Chemistry,' edited by Liebig and Gregory, 1847, p. 509; 'Elements of Chemistry,' by Sir Robert Kane, 1849, p. 552; Brande's 'Manual of Chemistry,' 1848, i, p. 820; Regnault, 'Cours Elémentaire de Chimie,' 1851, tome iii, p. 271; Gmelin's 'Handbook of Chemistry,' 1851, vol. v, p. 401; Abel and Bloxam's 'Handbook of Chemistry,' 1854, p. 409; Pereira's 'Elements of Materia Medica,' 1854, vol. i, p. 867. In these works of authority there is no reference to even the occasional or possible contamination of refined or any other kind of copper with arsenic; and two of the authors last mentioned, who are among the most recent writers on the science, state distinctly that "the best specimens of commercial copper are nearly pure; they contain only traces of iron." (Abel and Bloxam, op. cit., p. 409.) Dr. Miller, in his

which, up to that time, it had been customary to test it, namely, by boiling it in diluted hydrochloric acid, but he had not until then looked for arsenic in its substance. This statement, showing the candour and honesty of the witness, was well received by the Court, and it did not subject this gentleman to that unlimited abuse which, on this side of the Tweed, it appears is customary, among a certain class of barristers, to shower upon scientific witnesses.

'Elements of Chemistry,' 1856, part ii, p. 980, does not speak of the contamination of refined copper by arsenic; but in reference to commercial copper, he states that it is very nearly pure; it contains minute quantities of arsenic, iron, and lead. It is worthy of notice, that among the above-mentioned chemical authorities there are three (Mr. Brande, Dr. Miller, and Messrs. Abel and Bloxam) who especially describe Reinsch's process for detecting arsenic, and they concur in stating that the only test required for ascertaining the purity of the materials used, is first to boil the copper in diluted hydrochloric acid, in order to ascertain their purity before employing them as tests (Brande, p. 933; Miller, p. 967; Abel and Bloxam, p. 571). Messrs. Abel and Bloxam recommend the use of ordinary copper-wire cleaned with concentrated nitric acid and washed. I might add to these authorities the names of Orfila, Devergie, Schneider, Chevallier,* and other writers on toxicology, to prove either that

* Among all the works in the English and French languages on the adulterations and impurities of substances employed in chemistry, medicine, and the arts, there is, perhaps, none which can compete in comprehensiveness with the 'Dictionnaire des Altérations et Falsifications des Substances Alimentaires, Medicamenteuses, et Commerciales,' by M. Chevallier, of which the third edition was published in 1857. It consists of two volumes, comprising nearly 1400 pages. M. Chevallier is much employed in Paris in medico-legal analyses. On referring to this work (tome i, pp. 19 and 51; tome ii, p. 672), it will be found that the author is especially careful to describe arsenic as an impurity in sulphuric and hydrochloric acids and in zinc; to explain the means for its detection and separation, and to caution analysts in reference to its presence in these substances; but he does not even refer to *copper*, although he has himself published papers on its application and use, in reference to Reinsch's process. The only inference to be drawn from this omission is, that he either was not aware of the existence of arsenic in copper, or that its presence exerted so little influence on the uses of this metal as to render it unnecessary to notice it as an impurity.

The fact that all the commercial and nearly all the medicinal *sulphate of copper* contains arsenic, is also unnoticed by this writer. At p. 467, tome ii, he merely refers to the presence of sulphates of iron and zinc in sulphate of copper. There is so much arsenic in the ordinary sulphate, that ten grains of the crystals will commonly yield clear evidence of its presence. Other writers of repute on Materia Medica have, like M. Chevallier, overlooked this fact. Thus, Pereira ('Materia Medica,' i, p. 572) describes traces of sulphate of iron as the only impurity. The presence of this arsenical impurity may have an important bearing on evidence. If a man has taken large doses of sulphate of copper as an emetic and dies, arsenic may be found in the contents of his stomach, although none may have been administered. Chemists relying upon thousandths' of grains may thus be deceived, and mislead a court of law by their evidence. It is not a little remarkable that those who have condemned the use of copper containing arsenic, have either ignorantly or knowingly employed the sulphate of copper as a test for arsenic, without having previously tested this test for the poison itself. It is true that the quantity of arsenic present is small, and is not likely to

the presence of arsenic in refined copper was entirely unknown as a chemical fact, or wholly ignored as an obstacle to the safe use of Reinsch's process for the detection of arsenic. Orfila, it is true, recommends, as a precaution, that the copper used should be heated in a tube, to ascertain whether it evolves arsenious acid, before boiling it with hydrochloric acid and the suspected substance. With this supposed precaution, which, it need hardly be said, is not, chemically speaking, sufficient to distinguish arsenical from non-arsenical copper, he relied upon the production of the metallic deposit as a perfectly safe and certain indication of the presence of arsenic in the substance examined.* Flandin, who was opposed to the use of any process for detecting arsenic excepting his own, objected to Reinsch's method, not on the ground of arsenic being possibly conveyed to the liquid by copper, but because it was less delicate than the process of carbonization by sulphuric acid.† Galtier, in his 'Traité de Toxicologie,' 1855, i, p. 343, describes Reinsch's process, and merely requires that the copper should be *clean* and the diluted acid pure. Devergie speaks of it as a process but little employed, and simply points out that *clean copper* is required for the deposition of the arsenic.‡

In fact, whether among English or French and German writers on chemistry and toxicology, there is not one who has ever pointed out, or even suspected, that this process would lead to error by reason of the universal presence of arsenic in copper, commercial or refined, which is accessible to the chemist.§ All have hitherto relied upon the cleanness of the

affect the results, as the test is ordinarily used; but it is clear, if metallic copper is condemned because it contains traces of arsenic, no salt of copper can escape condemnation for a similar reason. It is the presence of a large quantity of arsenic in the commercial sulphate which is the cause of the occasional deposition of arsenic with copper by electrolysis.

* 'Traité de Toxicologie,' fifth edition, 1852, tome i, p. 521.

† 'Traité des Poisons,' i, 625, 1846.

‡ 'Médecine Légale,' Paris, 1852, tome iii, p. 460.

§ That wisdom which is almost invariably manifested after an event was shown soon after the trial of Smethurst, in comments upon the chemical evidence. It was suggested by one chemist that the copper-*gauze* which Dr. Odling and I had been in the habit of using for some years in the lectures on Chemistry and the demonstrations on Practical chemistry at Guy's Hospital was of an arsenical nature, while copper-*foil* or *wire* either was or might be easily obtained free from arsenic; that every chemist knew there was arsenic in copper, and that no one but ourselves had employed Reinsch's process without first dissolving a portion of the copper in an acid or in chlorine, and testing the salt thus produced for arsenic. It was forced upon the attention of the Court that one of the chemists for the defence had always taken especial care to use electrotype copper, as if this fact was a guarantee against its containing any arsenic. (See p. 30.) In short, what-

surface of the copper used, and the method of testing the acid and copper first pointed out by Reinsch. As a general rule, this is quite sufficient. There is no liability to fallacy unless the copper is used on a large scale, and there is an acid or salt present which acts upon and dissolves the impure metal. Pending its solution, the atoms of arsenic, combined with it as arsenide or arseniuret, are set free, and may thus attach themselves to the clean surface of the undissolved copper. It is clear that if the presence of a minute quantity of arsenic in copper presents that great risk of fallacy, which some chemists have recently endeavoured to impress on the public mind, no one of the numerous analyses for arsenic by Reinsch's process, which have been undertaken during the last twenty years, could have been made without the inevitable discovery of arsenic. In short, if a source of fallacy, it would have led to the constant and inevitable discovery of arsenic in every solid and liquid submitted to examination. Analysts who have had much experience in the use of this process, will bear me out in the statement, that in employing samples of the same copper and acid,—for one affirmative result in which arsenic is discovered, there will probably be four or five negative results, in which no deposit whatever has taken place on the arsenical copper, and no arsenic was detected. By boiling successive quantities of the same arsenicated copper in the same acid liquid containing arsenic, the whole of the free arsenic is finally removed; the deposits on the metal become less and less decided, they at length cease altogether, and the last portion of copper put into the liquid comes out nearly as bright as when introduced, or if at all dull on the surface, this dulness arises, not from arsenic, but from oxidation, as a result of long boiling. It is obvious, that if the arsenic came from the copper itself, and not from any extraneous source, instead of the arsenic diminishing on each introduction of the copper, it would go on increasing in proportion to the quantity of the metal employed in the analysis. The hundreds of negative results which have been obtained by experienced analysts, establish the untruthfulness of the assertion, that the process, as it is commonly employed, is attended with a serious risk of fallacy, even when copper containing arsenic is unknowingly used. The analyses performed by Reinsch, Gaultier de Claubry, Orfila, Christison, Maclagan, Geoghegan, Watson, Rey, Penny, and others, are as unassailable on this ground

ever may have been the motive animating these critics, their statements, as it will be seen from the authorities quoted, displayed either great ignorance or great untruthfulness.

as those which have been performed by Mr. Herapath himself, even with his No. 13 commercial wire, *i. e.*, assuming that the copper and acid have been boiled together, and no deposit formed before the suspected substance was added.

There is, however, great danger in endeavouring to conceal or distort a scientific truth, especially when, as experience now shows, reliance is placed upon false criteria to determine the presence or absence of arsenic in any given sample of copper. In the letter already referred to, Mr. Herapath states that the hundredth part of a grain of arsenic contained in the quantity of copper gauze (ten grains) used by Dr. Odling and myself in one of the analyses in Smethurst's case, would have rendered it (the copper) so *brittle*, that it could not be drawn into wire at all, much less into fine wire fit for gauze. The copper-wire (woven in gauze) which led to this fallacious result was not more than the 1-200th of an inch in diameter, and probably even less. The gauze included about 10,000 spaces or apertures in the square inch. We had the benefit of the opinion of an experienced chemist (Mr. Brande) as to the quantity of arsenic separated from the gauze in this experiment; it was considered to be equivalent to a proportion of at least 1-1000th part of arsenic. It caused some surprise to Mr. Brande, as well as to ourselves, that so much arsenic, in a well-defined ring of octahedral crystals, should have been procured from such highly flexible and refined copper as that which we employed in our experiment. It was a new fact to him and to ourselves, that copper in so highly ductile and flexible a condition should be so strongly impregnated with arsenic. It is clear from Mr. Herapath's reliance on exceeding brittleness as a test of the presence of a small quantity of arsenic in copper, that he would have drawn the same inference which, in the first instance, we felt constrained to draw, namely, that no arsenic could be contained in a wire so fine and flexible as that which we used. Other authorities share Mr. Herapath's erroneous opinion in reference to this matter. Gmelin says, on the combination of arsenic with copper,* that "copper alloyed with 0·15 per cent. of arsenic, becomes somewhat brittle when cold, and very brittle at a red heat." Regnault states, that copper containing arsenic in small quantity becomes whitish and very brittle; and Abel and Bloxam say, that a very small quantity of arsenic injures the colour of the metal, rendering it whitish, at the same time causing it to

* 'Handbook of Chemistry,' tome v, p. 470.

be somewhat brittle. Nothing can be more unsafe than a reliance upon these alleged physical effects of arsenic on copper, as evidence of the presence or absence of that substance. The facts now ascertained are simply the reverse. Copper may contain sufficient arsenic to lead to fallacious results in analysis, without any change of colour, and without losing any of its malleability or ductility; while, when entirely deprived of arsenic and other metals, it has been found so brittle that, even after several meltings and annealings, it was impossible to roll it into thin foil.* From some experiments recently made by Dr. Hofmann and Dr. Matthiessen on the conductility of copper, it would appear that the electric conductive power of ductile copper is materially affected by the presence of small quantities of arsenic, as well as of other metals and metalloids. An analysis of the black precipitate formed during the electrolytic decomposition of sulphate of copper by the galvanic current, has led to the discovery of twelve metals, which must have been contained in the original copper. One hundred parts of this black sediment yielded 7·40 parts of arsenic. The other metals found in variable proportions were antimony (9·22 per cent.), platinum, gold, silver, lead, iron, nickel, cobalt, vanadium, and tin.† It now becomes, indeed, a serious question whether purity, in regard to this and other metals, is not merely a relative term; and whether the discovery of these metallic impurities does not depend on the quantity of copper or zinc submitted to analysis at any one time.

I am indebted to Dr. Matthiessen, of Torrington Street, London, a skilled metallurgical chemist, for some useful facts regarding the effects of arsenic on copper. He informs me that there is no test so delicate or certain for the detection of this impurity in copper, as its power of conducting the electric current. While pure copper has a maximum power of conduction, the presence in it of the smallest traces of arsenic, &c., scarcely discoverable by chemical processes, reduces the conducting power to a measurable extent. He has given to me,—1. A sample of copper containing 5·4 per cent. of arsenic. Its colour is pale red, it has evidently undergone a change; but its ductility has been so little affected that it has been drawn into a wire only 1-80th of an

* I sent a sample of copper without arsenic to my friend Mr. Brande, for the purpose of having it rolled under the Mint presses. He writes to me, that "there is an inherent *hardness* and *brittleness* about it which we have in vain attempted by repeated fusions, &c., to get rid of, so that it has ultimately produced a riband full of flaws and fissures."

† 'Proceedings of the Royal Society,' tome x, No. 38, 1860, p. 302.

inch in thickness. It is flexible, but breaks when suddenly bent. 2. A wire containing 2·8 per cent. of arsenic, having a diameter of about the 1-100th of an inch. It has the usual copper-red colour, and can be bent and twisted upon itself without breaking. It manifests no more brittleness than ordinary copper-wire of the same thickness. Although it contains nearly 1-33d of its weight of arsenic, no one, judging by its appearance and physical properties, would entertain a suspicion of the presence of this substance. 3. A third wire of Spanish copper, containing 2 per cent. of arsenic. It has about the same diameter as No. 2. It is perfectly flexible, and manifests no brittleness whatever. 4. A sample of fine British copper-wire, as it is commonly sold, with traces of arsenic. It is of about the same diameter, but is not so elastic as 2 and 3. Let the reader compare these facts with the following statements contained in Mr. Herapath's letter:*—"The hundredth part of a grain of arsenic in that quantity (ten grains) of copper, would render it so brittle that it *could not be drawn into wire at all,* much less into fine wire fit for gauze." It is obvious that this chemist is either entirely unacquainted with the properties of copper containing arsenic as an alloy, or that he relies upon the general ignorance of the public and profession in reference to such matters, to publish a statement wholly opposed to facts.

Having recently examined not fewer than forty samples of copper, as it is employed by chemists in the form of wire of various sizes, of foil of various thicknesses, and of gauze, coarse and fine, I have found arsenic in all of them, and in some instances in comparatively large proportion. These samples were procured from dealers in this metropolis, from various parts of England, from Scotland and Ireland. Some of them have been forwarded to me by medical practitioners who had employed them as *pure* in medico-legal analyses, while some samples of gauze and foil had been sold as pure by dealers. In every instance arsenic was found in the copper; and there is no other conclusion to be drawn than that all the copper used in commerce, the arts, and chemistry, refined or unrefined, contains arsenic in such proportion, as when the metal is dissolved or destroyed, to render it unfit for Reinsch's process.† Mr. Brande stated, in his evidence at the trial of

* 'Lancet,' September 3, 1859, p. 248.

† Since writing the above, I have met with a passage in Will's 'Analyse Chimique,' translated by Risler (1858), in which, in speaking of the diffusion of arsenic, he says, "On on rencontre des traces presque toujours dans le soufre, le fer, *le cuivre*, l'étain, et l'antimoine."

Smethurst, that this was to him a new fact in science, and it was equally new to all who had the candour and honesty to avow it, and who were not ashamed to acknowledge that they had been in the habit of using copper without applying any other method of testing it before use than that which was originally suggested by Reinsch. On this occasion I procured from five gentlemen, of great repute in the three kingdoms as analysts in cases of poisoning, samples of the copper which they had been in the habit of employing in their analyses since the introduction of Reinsch's process. In each instance arsenic was detected in the copper, and in two of the samples the proportion was greater than in the copper gauze which had been employed in our analysis.

(*To be continued.*)

CHEESE AS A DIGESTER.

As a digester, as some appropriately call it, cheese—that which is decayed and mouldy being preferred by connoisseurs — is often eaten after dinner. The action which experience seems to have proved it to possess, in aiding the digestion of what has previously been eaten, is both curious and interesting, and has had some light thrown upon it by recent chemical research. When the curd of milk is exposed to the air in a moist state, for a few days, at a moderate temperature, it begins gradually to decay, to emit a disagreeable odour, and to ferment. When in this state, it possesses the property, in certain circumstances, of inducing a species of chemical change and fermentation in other moist substances with which it is mixed or is brought into contact. It acts after the same manner as sour leaven does when mixed with sweet dough. Now, old and partially decayed cheese acts in a similar way when introduced into the stomach. It causes chemical changes gradually to commence among the particles of the food which has previously been eaten, and thus facilitates the dissolution which necessarily precedes digestion. It is only some kinds of cheese, however, which will effect this purpose. Those are generally considered the best in which some kind of cheese-mould has established itself. Hence the mere eating of a morsel of cheese after dinner does not necessarily promote digestion. If too new, or of improper quality, it will only add to the quantity of food with which the stomach is already overloaded, and will have to await its turn for digestion by the ordinary process.—*Chemistry of Common Life.*

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Annales de Médecine Vétérinaire, Bruxelles, 1860.

FIBRO-FATTY TUMOUR, INVOLVING THE MAMMARY GLAND OF A MARE; EXTIRPATION AND CURE.

(From the Clinic of the School.)

An aged cart-mare was brought to the school on the 15th of June, 1860, having an enormous, hard, and indolent tumour on the mammary gland, extending to the umbilicus. This tumour had, according to information received, come on since the month of January, at which time it was the size of an egg; but for the last three months it had daily increased, so as to render the mare useless. Professor D'Elwart, having assured himself by exploration that no communication existed between it and the abdominal cavity, decided on its removal. The patient being duly prepared, the operation was performed on the 18th. The morbid production weighed nearly fifteen pounds; it had for its nucleus the whole of the mammary gland. The wound, or rather the excavation, was filled with dry tow, secured by stitches, over which a bandage was applied. On the 20th, the wound was dressed for the first time; on the 24th, suppuration was established; on the 14th of July, the animal was discharged cured.

TYPHOID FEVER IN THE HORSE, AND ITS RELATION WITH THAT IN MAN.

By M. Baillif, Veterinary Surgeon in the Artillery Train (Imperial Guard, France).

The author divides this disease into three forms; the muco-catarrhal, the thoracic, and the abdominal. The first is not very serious, and is what we should designate simple influenza; is never dangerous, except when associated with the second form, which is sometimes called typhoid

pleuro-pneumonia, and which is also complicated by alteration of the blood. In this case two powerful agents lead to the typhoid state—the alteration of the blood, and the products resulting from the organic lesion of the respiratory apparatus. What is deceptive in these cases is, that there is no loss of appetite at the outset; the cough, the state of the conjunctiva, the acceleration of the respiration, are the first and only signs of the loss of health. The other symptoms are great prostration of strength, fixedness of the eyes, the mucous membrane being of a reddish-yellow colour, petechiæ, dilatation, more or less marked, of the nostrils, stiffness of the whole body, and particularly a weakness of the posterior extremities. This weakness of the loins, the yellow infiltration, and petechiæ on the mucous membrane are pathognomonic of this disease. The practitioner is also struck by the anxiety of the patient, and the acceleration of the respiration, which is at times jerked, as in broken wind. It is then easy to ascertain, by auscultation, the absence of the respiratory murmur on one or both sides of the lungs. The pulse is small and feeble; the mouth is dry, and emits an offensive smell; there is frequently a yellow, saffron-coloured discharge from the nose; the dung is hard, small, and coated with mucus, and sometimes of a fœtid odour. In bad cases the respiration increases from 25 to 30, or even to 60 per minute. The progress of this form of the malady is very rapid, if not prevented at the outset from fixing itself on the organs of respiration. It will speedily run its course and terminate in death, either by disorganization or effusion; not unfrequently these two lesions are found in the same subject.

The third form, or abdominal, also called gastro-enteric or pneumono-hepatic, is the most dangerous. It more closely resembles the typhoid fever of man. The principal lesions are in the mucous membrane of the intestines and the glands of the intestinal tube. The principal symptoms, independent of those in common with the other forms, are signs of colic; the belly is distended, the flank tucked up, the expiration short, extreme prostration, the head down almost to the ground, the eyes glazed, the mucous membrane injected, reddish-yellow in colour, petechiæ and the scybalæ coated with a fibro-albuminous substance. In very bad cases the animals move their hind feet frequently and try to lie down, but if down remain but a short time; at other times they remain immovable. The pulse becomes feeble, the extremities are alternately hot and cold, the weakness increases, the animal can scarcely stand, and if made to move falls on his knees. In some cases the two forms are so much confounded with one another that

they can hardly be distinguished, and it is difficult to tell which of the two predominates—the pneumonic or the enteritic.

The progress and termination of this form is generally rapid, in some cases lasting only one or two days, and even less. In other cases, though severe, from seven to nine days elapse before death occurs, or, as the author has sometimes seen it, by its termination in cure—in which case, however, the convalescence is generally very long, and great care and attention are required.

Post-mortem appearances.—The lungs are of a reddish colour; their aspect is not that of pneumonia; they are not spotted with black or gray patches, neither are there any abscesses; the more common lesion is that of splenification, not hepatization. In those cases where the malady has assumed the character of pleurisy, a quantity of fluid is found in the cavity of the chest,—in some cases, as the author asserts, as much as from thirty to forty litres; fibro-albuminous deposits are, however, rarely found in this fluid, neither are those false membranes which in true cases of pleuritis cover the pleura. This is worthy of notice, as it shows the disease to be of a different nature. The pericardium is of a pale colour, it contains always a little effusion; the substance of the heart is soft, pale, and easily divided by the fingers; the coagulum contained in the ventricles is soft and semi-fluid. The blood in the large arterial and venous trunks offers the same characters as that in the cavities of the heart. The nervous system does not present much alteration, except a little effusion occasionally found in the theca of the spinal cord. In the abdominal form the principal lesions are on the mucous membrane of the intestines. The stomach in the majority of cases is empty, but sometimes contains a small quantity of liquid ingesta; the mucous membrane of the left portion is of a grayish colour, presenting numerous small black or red spots; true ecchymoses of various sizes. Sometimes the mucous membrane is thickened, principally towards the pylorus, where it is frequently found studded with small ulcers. In the small intestines there is constantly found a greater or less amount of matter of a dirty-grayish colour; the mucous membrane is more or less thickened, softened, and of a purple-red colour, on which are seen numerous small spots of a black-purple colour. The glands of Peyer are hypertrophied, and form visible *saillies* under the mucous membrane; but the author has never found these follicles ulcerated, but has found them so softened that the slightest pressure of the fingers was sufficient to destroy the mucous membrane covering them. Although the glands of Peyer have not been

found ulcerated, the mucous membrane has been observed frequently to be ulcerated in other parts of the intestines, which seemed to have been the result of larger portions having sloughed off, and presenting the appearance of furunculi. These ulcerations are more or less profound, and have a yellow-greenish appearance, with raised edges. Though they in general only affect the mucous membrane, they are not unfrequently deeper seated, and sometimes perforate the intestine. At other times these lesions are absent, and the mucous membrane is only of a grayish-leaden hue throughout its whole extent. The cæcum and colon, in all the forms of this disease, are the seat of remarkable lesions; they are always distended with gas, and contain some liquid, with a portion of aliment. The mucous membrane presents the same sort of lesions as exist in the small intestines; these vary in number and depth in proportion to the intensity of the malady. It is particularly in this portion of the tube that the redness, the uneven surface, the infiltrations, large ecchymoses, ulcerations, &c., are perceived. The colon is mostly half filled with excremental matters; these are sometimes soft and liquid, at others hard: the mucous membrane is more or less thickened, and of grayish-leaden, or even black colour; very often large portions of this intestine are ulcerated. In the single colon and rectum, the lesions are less perceptible. The alterations in the other organs are all minutely described by the author. Amongst the causes of this disease, one of the principal is the assemblage of large numbers of animals in the same locality. The treatment recommended by the author is stimulating and tonic, in which quinine and the essence of turpentine figure largely.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the West of Scotland Veterinary Medical Association was held in Glasgow, on the 28th December, 1860. In the absence of Mr. Cockburn, Mr. Steele of Biggar was called to the chair. The minutes of the previous meeting having been read and approved of, Professor Gamgee asked if the society had not yet elected a patron, stating that he considered it almost a *sine qua non* to its progress, the fact of having a respectable nobleman, one who took an interest in the veterinary profession and agriculture; and if not yet effected, he would propose that at this meeting a patron be nominated.

Mr. Anderson said, that at a previous meeting it had been discussed, but that the general opinion of the members was, that before proceeding to such a course they had better wait a little to see how the society would succeed.

Mr. Robinson said that Sir M. R. S. Stewart, Bart., M.P., had been

suggested, and he thought that it was generally understood by the members, that if they succeeded in keeping the society well together, and saw positive appearances of its progress, they would solicit him to be their patron.

Professor Gamgee said he would not press at this time the election of a patron, but he thought it would be a great advantage to the society the electing of such a nobleman as Mr. Robinson had spoken of.

Mr. Pottie seconded Professor Gamgee's motion, stating that the society was now in a good and prosperous condition, and that they should not delay any longer in having a patron.

Mr. Dunlop said they were all as one respecting having a patron, but they were merely anxious to have the society in a position that would do that patron some little honour in being connected with it.

Mr. Anderson then proposed Sir M. R. S. Stewart, seconded by Mr. Steele.

Mr. M'Call thought that to appoint a patron at this meeting would be too premature. He, as an amendment, moved that previous intimation be given to all the members, per circular. On taking the vote of the meeting, the amendment was carried.

Mr. Anderson proposed Mr. Steele as president of the society for the ensuing year, seconded by *Mr. M'Call.*

Mr. Robinson proposed Mr. Pottie as secretary, seconded by *Professor Gamgee.*

Mr. Anderson proposed that Mr. Dunlop should be re-elected a vice-president, and Mr. Robinson be also elected a vice-president, which was seconded by *Mr. Pottie*, and agreed to.

Mr. Robinson proposed Mr. M'Call as a vice-president, which was duly seconded, and agreed to.

Professor Gamgee proposed that Mr. Marshall be re-elected as treasurer, which, being seconded, was agreed to.

The following gentlemen were then elected directors:—Messrs. Anderson, Cockburn, Sharp, Howatt, Mitchell, Donaldson, Dobie, and Blackie.

Professor Gamgee then said, that although departing from the general business of the meeting, he would ask permission to make a few remarks on a subject which should not be overlooked by a body of British veterinarians, met as they were that day. He alluded to the death of that most distinguished ornament of the veterinary profession, Mr. Bracy Clark. The illustrious veterinarian, who had just departed this life at the venerable age of ninety, was one of the first students of the London Veterinary College. Urged on by his elder brother to enter a new-born profession, which had the great recommendation of meeting an urgent want of all owners of stock, he laboured zealously to become proficient in his adopted calling. His career of study was prolonged; and it was only several years after receiving his diploma that he was in the active exercise of his duties as a veterinary practitioner. From that period, however, to the day of his death, Bracy Clark laboured hard for the advancement of science, for the benefit of the noble animal the horse, which he admired and regarded with the greatest affection, and for the benefit of the profession, with whose rulers he did not at all times agree, particularly on scientific subjects. He proved himself an able entymologist, and his careful and lucid researches on the genus Œstrus added one great series of facts in opposition to views then held by scientific men regarding spontaneous generation. Although his labours in connection with the art of shoeing cannot be said to have led to any practical change of great benefit in farriery, nevertheless we

must regard the splendid works on this subject as those of a man of genius, enlightened by literary labours of remarkable profundity, and assisted by a spirit of close observation and experimentation, which are the only attributes capable of enabling a man to accomplish what Bracy Clark did. I shall not detain you on the many subjects to which Mr. Clark devoted his time and pen; they all indicate how great and earnest was the man in the pursuit and diffusion of knowledge. He reaped higher honours than any person that has yet entered our profession, whether here or abroad. He was justly made a Fellow of the Linnean Society. He was created a member of the Royal Institute of France, and many other learned bodies readily admitted him in recognition of his exceptional merits. No name ever conferred a similar amount of distinction on British veterinarians. If reference be made abroad to the position of our science in her Majesty's dominions, Bracy Clark used to be mentioned as an indication of our being above all others. Let us not forget him, now that he is dead; and I esteem it a privilege to have it in my power to-day, at the first meeting of veterinarians since Mr. Clark's demise, to propose that a vote be recorded in testimony of the high esteem and veneration felt for the late Mr. Bracy Clark, F.L.S., coupled with an expression of condolence and sympathy with his relatives. He also proposed that the secretary should transmit a copy of this resolution to Mr. Clark's daughter, Mrs. Pope, in London, seconded by Mr. Dunlop.

Mr. Marshall, being called upon, read an interesting paper on influenza, which was listened to with marked attention.

Professor Gamgee said, the subject chosen was very suitable, the disease being at present very prevalent. He stated that he had a vast number of cases in Edinburgh, and was happy to say that he had not to record one single death. Influenza assumed very various forms in different countries and at different periods of its attack. It sometimes approached most the character of a catarrhal fever, at others that of a rheumatic fever, and sometimes a catarrho-rheumatic form; at all times great prostration manifested itself. The disease he had to treat during the past autumn was of a catarrho-rheumatic type, and he recommended at first a mild aperient, clysters, large mustard embrocations to the throat and chest. He put great dependence on the aperient in checking the progress of the disease, and, if practicable, to induce a diaphoretic action, and spoke highly of the advantage of a Turkish bath being connected with every veterinary establishment; but in lieu of the bath to bring about diaphoresis, he gave Camphor and Liq. Amon. Acet. ʒiij to ʒvj, two and three times a day, with warm clothing. He also, in cases where there were symptoms of effusion, gave Digitalis in ʒj doses, combined with nitre, three times a day for two days. He considered bloodletting very bad treatment, and ascribed the cause of the disease to a poison in the blood.

Professor Gamgee, on being asked what drug he gave as an aperient, said Cape aloes.

Mr. Steele agreed with Professor Gamgee in all his treatment, excepting the administration of aloes, and asked in what doses Professor Gamgee prescribed it.

Professor Gamgee said, that his father had made a series of experiments with Cape aloes, and had satisfied himself, that in doses of from ʒv to ʒviij to be a much milder purgative than the Barbadoes, and much safer in influenza cases; in such cases, he generally gave from ʒiv to ʒvj.

Mr. M'Call differed with Professor Gamgee in the giving of aloes; in

any of his cases he said he never found *one* that he would have considered it safe to administer aloes. He dreaded this drug much from the predisposition this disease had to diarrhœa. He never had any difficulty in getting the bowels to his mind by the administration of ʒj doses of calomel daily. He also gave Liq. Amon. Acet., and to induce diaphoresis he sponged the animal all over with cold water, enveloped the body with warm clothing, and bandaged the legs their entire length; and in cases of purpura hæmorrhagica, he had been singularly fortunate by this method of treatment.

Professor Gamgee denied that there was any such disease as purpura hæmorrhagica seen in the horse, and that the cases Mr. M'Call referred to would in all probability be cases of typhus.

Mr. M'Call said he was aware Professor Gamgee disputed the existence of this disease in the horse, but he merely used that term as it was generally understood.

Mr. Anderson related a few unfortunate cases that he had treated for this disease. His opinion was that its seat lay principally in the kidneys. In all the post-mortem examinations he had made he found these glands white, soft and flabby; and was also of opinion that the swellings produced in different parts of the body were caused by the urine becoming absorbed into the system, the kidneys ceasing to act.

Professor Gamgee thought the whole secret to be a poison in the blood, and the reason of the appearances of the kidneys after death described by Mr. Anderson, in his opinion, was owing to their being excretory organs, and being partly their duty to relieve the blood of its poison, in doing which they became affected.

Mr. Robinson related a case of influenza, in which metastasis took place, the peculiarity being that one foot only was affected; the horse appeared to be in great agony, holding up the foot and actually crying out. The shoe was immediately taken off, the animal freely bled from the toe, and the foot poulticed. On the following day he appeared a little easier, the bleeding from the toe was repeated, and the case otherwise treated for laminitis, and ultimately recovered.

Mr. M'Cali inquired of Professor Gamgee what the poison that he asserted to be the cause of influenza was.

Professor Gamgee said, that perhaps this was one of the most difficult questions in the profession, as all researches had failed to distinguish any difference in the poisons of different diseases; but that it must be one analogous to the poison in typhus in the human subject.

Mr. M'Call could not agree with Professor Gamgee in attributing the cause of this disease to a blood poison, but thought it was an excited catarrh with derangement of the liver.

Mr. Steele said, that as this was opening up a new field of discussion, and the hour being now late, he thought they had better adjourn this subject till next meeting. A vote of thanks was then awarded to Mr. Marshall for his valuable paper, and to the chairman.

Mr. Dunlop proposed that the secretary report the proceedings of the meeting to the *Veterinarian* and to the *Edinburgh Veterinary Review*.

ALEXANDER ROBINSON,
Sec. pro tem.

The members then, accompanied by a few of the students now attending the classes at Edinburgh, adjourned to the dining-hall. Mr. Steele was called to the chair, and the evening was spent in a manner to afford much satisfaction to all present.

Veterinary Jurisprudence.

COURT OF EXCHEQUER, Feb. 1.

(Sittings at Nisi Prius, at Westminster, before Mr. Baron Martin *and a Special Jury.)*

COMMMERRELL *v.* STEVENS.

Veterinary Surgeons' Liabilities.

Mr. Quain and *Mr. Mathew* were counsel for the plaintiff; *Mr. Macaulay*, Q.C., and *Mr. Griffits* for the defendant.

This was an action brought to recover damages for negligence, by which means a horse was seriously injured in the eye, and deteriorated in value. The plaintiff is the widow of the late Mr. Commerrell, and resides at Strood-park, near Horsham. The defendant is a veterinary surgeon and farrier, carrying on business in Park-lane. In the summer of last year the plaintiff's coachman took a brougham horse, for which his mistress had some time before given Mr. Quartermaine, of Piccadilly, £100, to be shod at the plaintiff's forge, tying him up to a ring in the forge, the men requesting him not to wait, and promising to bring the horse home when done. A sufficient time having elapsed, and the horse not being forthcoming, the coachman went to look after him, and found the defendant's servants bathing his right eye, which appeared to have been very badly injured. The defendant's assistant wrote to the plaintiff, telling her the nature of the injury, and promising to do all that could be done for the horse; however, the horse was subsequently sent to Mr. Mavor, the veterinary surgeon, who used all his skill to cure him, but nothing could be done with the eye, as something had broken the outer coating of the ball of it, causing a quantity of the humour to escape. Mr. Mavor told Mrs. Commerrell that the sight was irretrievably gone, when the horse was sent back to Tattersall's, and sold for 40 guineas, Mr. Mavor charging altogether £11 7s. 6d. It was said that the hook to which the animal had been fastened when at the forge projected three inches from the wall and was six feet from the ground, both of which circumstances made the hook dangerous to horses when tied up to it for shoeing purposes. This was the plaintiff's case.

On the part of the defence, it was proved that the forge was in the same state that it had been ever since the year 1822, and one or two veterinary surgeons swore that it was possible for the eye, after receiving such an injury as had been described, to get well, and have the sight perfect again. How the horse really met with the accident did not appear, but the supposition was that he had thrown his head up and knocked his eye against the lower part of the hook through which a ring passed, or that he had jumped forward for some reason or another. The men engaged in shoeing the horse, both of whom are now out of the defendant's employment, were called, and swore that he was generally very restive and hung back, when it became necessary to drive or frighten him forward to prevent the halter from breaking; that upon the occasion when the injury to the eye was discovered by one of them, they had struck him on the quarter, the one with the flat side of a hammer, and the other with a twitch-stick, in order to send him forward; and that one of them went to fit a shoe on to his off fore foot, and saw the eye was injured.

The horse was sold after it left Tattersall's for 47 guineas, was resold at the same price, and, eventually, Mr. Baker, a veterinary surgeon, of Clapham-common, sold him to a Mr. Edgar for £100, the horse's sight being then perfect.

Mr. Stevens, the defendant, was called, and said that he had been in practice as a veterinary surgeon for twenty-eight years, twenty of which he had passed at Newmarket, and that the fixtures, hooks, rings, &c., in Park-lane were those used by his predecessor, Mr. Henderson, for very many years, and were quite fit for the purposes to which they were put.

Professor Spooner was called, and stated that he had examined the forge with the hooks, &c., and that it was a very fit and proper place for shoeing horses.

After the learned counsel had addressed the jury on behalf of their respective clients,

His Lordship summed up, when

The jury retired to consider their verdict, and, after some time, returned into court, finding a verdict for the plaintiff—Damages 20 guineas.

COURT OF COMMON PLEAS, Feb. 25.

(*Sittings in Banco, before* Mr. Justice Williams *and* Mr. Justice Willes.)

BRADY *v.* TODD.

Right of a Servant to give a Warranty.

This was an action to recover damages in consequence of a horse not having turned out to be sound, according to the warranty which had been given by the defendant's servant.

Mr. Justice Williams said the question now was, whether a rule to set aside the verdict for the plaintiff should be made absolute. The defendant was a tradesman in London, but he also had a farm in the country which was managed by his bailiff, Gregg; and the jury found that Gregg, in selling the horse to the plaintiff, warranted it sound and quiet in harness. The defendant stated—and this must be taken to be the truth—that he had not given authority to Gregg to give any such warranty. The relevant facts were that the plaintiff applied to the defendant to sell him the horse, and the defendant accordingly sent Gregg with the horse, and authorised him to sell it for thirty guineas. The plaintiff contended that giving a servant an article to sell implied an authority on his part to warrant; that it must be taken that the authority to sell was an authority to do all that was done in the usual course of a sale; and that it was usual to warrant a horse. The plaintiff, in the opinion of the Court, failed upon this point. The question of warranty frequently arose upon the sale of horses; but a sale might be made without any warranty. If the Court should lay down that the servant of a person who was not a horse dealer, intrusted to sell a horse, had authority to warrant, they would lay masters open to new and unknown liability.

Rule absolute for a nonsuit.

HEDON COUNTY COURT.

CALEY *v.* BRAIMBRIDGE.

Glanders.

The plaintiff is a farmer at Garton, and the defendant an omnibus proprietor at Withernwick.

Mr. Watson, of Hedon, appeared for the plaintiff, and *Mr. Preston,* of Hull, for the defendant.

The action in this case was brought to recover the sum of £21 10*s.* for breach of contract, and expenses connected therewith. From the evidence it appeared that in September last the plaintiff and defendant exchanged horses, but the defendant, not being satisfied with the mare which he had taken from the plaintiff, in about a fortnight afterwards asked him to take the mare back and let him (the defendant) have another horse, called "Prince," which the plaintiff had. Having heard that the mare had been kicking whilst in the 'bus, the plaintiff asked the defendant if she was any worse, to which the latter replied that she had hurt her leg, but had only a slight swelling, which would go down in two or three days. The plaintiff asked the defendant particularly a second time if she was as sound as when he let him (the defendant) have her, and the defendant answered that she was as good and sound as she was the first day he got her. The plaintiff sold the mare to Francis Bray, cattle-dealer, of Barrow, who sold her to a man named Gascoyne, in whose possession she was condemned of having the glanders, and ordered to be shot by the magistrates. Gascoyne sued Bray for damages, and recovered; Bray sued the plaintiff Caley, who compromised the matter by the payment of £20; and the plaintiff having learnt, and it being proved by his witnesses, that at the time his mare went into the defendant's possession he had two glandered horses, one of which (a short time after the re-exchange of horses between the plaintiff and defendant) was sold by the defendant to Mr. Hunter, of Hull, cab proprietor, in whose possession it was condemned of having the glanders, and was shot. He (the plaintiff) now sought to prove that his mare had got the glanders whilst in the defendant's possession, from having been brought into contact with glandered horses; and it was contended that the defendant's words, that "she was as sound and good as when he first got her," constituted a contract, which contract, on the plaintiff's mare subsequently being shot for the glanders, it was submitted that the plaintiff's case was fully proved to have been broken.

For the defence, *Mr. Preston* very ably argued the case upon the facts deposed to by the witnesses called for the plaintiff's case, and maintained that there had been no breach of contract; that when the plaintiff questioned the defendant respecting the state of the mare, it was merely in respect to the accident, and not in respect to its being glandered, as he did not then know that the defendant had any glandered horses in his possession, and if he had been questioning the defendant as to its being free from glanders, he submitted that as they had it in evidence that the glanders was an incipient disease to which a horse might be subject for two or three years, he submitted that the mare might have been so diseased before she went into defendant's possession, or that she might have got the disease after she subsequently left the plaintiff's possession.

After hearing the defendant's evidence, which was to the effect that since he let the plaintiff have his mare back, he had had to shoot two horses that had got the glanders, which, with the one sold to Mr. Hunter, of Hull, made three which had to be shot,

His Honour returned a verdict for the defendant.

MISCELLANEA.

THE PRICE OF THE PIGS.

In passing through Newgate Market, at the time when much diseased meat was being sold there, we saw, hanging up at a stall, two small pigs, which, if fat, would be called "sucking pigs," but whose appearance created a doubt as to whether they had lived many days after birth, or even been born alive, as they were so much emaciated and of all colours.

While we were looking on, we observed an old lady eyeing these tempting morsels, perhaps thinking them within her means, and desirous of a feast! At length she summoned up courage to ask a dirty, greasy-looking man who stood by, the price of the pigs. "Price of the pigs? Ma'am," said he drily, and with a twinkle in his blood-shot eye, "Price of the pigs? A penny a piece! Ma'am."

This was too much for the old lady; she knew that they could not be good, and, indignantly turning on her heel, went on her way to seek another epicurean treat.

OBITUARY.

Died recently, at Luton, Bedfordshire, of phthisis pulmonalis, G. J. Vincent, M.R.C.V.S. His diploma bears date Dec. 21st, 1853.

Likewise, on the 27th Feb., at Dartford, Kent, James Edgar, M.R.C.V.S., aged 60. Mr. Edgar was an old member of the profession, having obtained his diploma May 7th, 1827.

Also, on the 2d ult., in consequence of a fall from his horse, W. Ridgeman, M.R.C.V.S., Liskeard, Cornwall. Mr. Ridgeman passed his examination, January 22d, 1842.

Since the above was sent to press, we regret to have received intelligence of the deaths of two more members of the profession; *namely*, 1st, Mr. Joseph Boston, M.R.C.V.S., Walworth, London, who died on the 22d ult., after a fortnight's illness, aged 53. Mr. Boston fell a sacrifice to the practice of his profession, having unfortunately become inoculated with the matter of glanders.

The second death is that of Mr. Richard Henry Pritchard, M.R C.V.S., Wolverhampton, aged 27. His death also took place on the 22d ult., after a very short illness, which assumed the character of bilious fever. Mr. Pritchard only passed his examination in May, 1856. He was a young man of ability, and had he been spared would have taken rank among the most eminent of his profession.

ERRATA IN NO. 399.

Page 126, line 5, *for* stomach *read* duodenum.
... 155, tenth line from the bottom, *for* Mr. Rice *read* Mr. Nice.

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Communications and Cases.

ON THERAPEUTICS.

By Professor Brown, M.R.C.V.S.,

Royal Agricultural College, Cirencester.

(*Continued from p.* 195.)

THERAPEUTIC ACTION OF THE SECOND GROUP.

When at the commencement we endeavoured to justify the arrangement of all medicinal agents into three groups, we claimed for each of these the possession of a distinctive character, viz., for the first group an universal power of exalting action; for the second, the opposite power of depressing action; and for the third, the property of inducing a change in some of the constituents of the body.

The subdivisions of the first group—cathartics, stimulants, diuretics, diaphoretics, tonics, and counter-irritants, have been discussed in reference to their therapeutic effects; a review of the observations upon them will, we think, sufficiently show that each class contains those drugs alone which, however varied their composition and properties, agree in the possession of a common power of inducing excess, and to be consequently remedial for those diseases in which "defect" is the actual and essential element.

The second group includes a number of agents hich, although differing widely in their nature, are allied by the common property of decreasing action, and hence are directly opposed to the agents of the first group. We do not assert them to be sedative in the sense in which the word is ordinarily ap-

plied, any more than we in the same restricted sense define the actions of the first group to be stimulant; but we propose to show that every member of the second group is distinguished by a certain action upon the system, the direct consequence of which is the decrease of some function or faculty of the organism.

The several subdivisions are—narcotics, sedatives, refrigerants, astringents; of these the two first are admittedly depressing in their effects, and are only employed when excitement in some shape is to be combated; the last two occupy a doubtful position in the opinion of some persons. Refrigerants, according to an axiom of the hydropathic system, occasion a determination of blood to the part to which they are applied, instead of repelling it; the adherents to that system inform us, that if a limb be placed in cold water for a sufficient time, the surface vessels become charged with an excess of blood, even to the extent of causing rupture and hæmorrhage, as in the application of the hydropathic system to the cure of hæmorrhoids. Without knowing all the circumstances of a given instance it would be unfair to meet an assertion of the kind by an expression of doubt, but experience justifies the remark that such is not the ordinary action of cold, as we shall have an opportunity of demonstrating when the subject comes in due course under our notice.

Astringents, again, may be by some considered to possess rather a stimulant than a sedative action, but as the direct result of their exhibition is diminished secretion, we deem it advisable to place them in their present position.

Therapeutically, all the medicines of the second group are applicable to diseases whose principal element is "excess;" their use requires the same discrimination that we insisted upon, when remarking upon the agents of the first group; for example, a correct diagnosis, to arrive at which it may be necessary to reject some very prominent symptom, which taken alone might lead to a wrong conclusion, as in the case before quoted, to wit, the occurrence of indications of nervous and vascular excitement in association with general anæmia; under such circumstances the agents of the second group, although they afford temporary relief, really increase the depression; while those of the first group, by removing the element "defect" and restoring the lost tone, completely and permanently rectify the morbid sensibility upon which the deceptive symptoms depended.

Upon the subsidence of the action of the medicines of the first group we observed a contrary action to follow as a consequence of the primary effect, viz., depression of the function

which had just previously been exalted. This reaction we endeavoured to separate altogether from the medicinal action which preceded it, by referring to the ordinary occurrence of exhaustion after activity, the exhaustion equally following excitement of any kind, whether produced by medicinal agency or arising from the operation of external causes. What we particularly wish to express is, that the depression is not the *secondary* consequence of the medicinal action, because we assume all medicinal action to have ceased, but the *immediate* and *direct* consequence of the excitement which the medicine has produced.

Upon the subsidence of the action of agents of the second group we also observe a reaction directly opposed to the medicinal effect; a reaction to be explained upon precisely the same principles. It is evident that the organ or part under the influence of the agents of the second group is in a state of rest, or almost absolutely suspended action for a time. As soon as the medicinal effect ceases a new activity arises in the part, not a consequence of *secondary* medicinal action, but a *direct* result of the accumulation of force during the period of inactivity.

A careful examination of the effects of the various medicines whose action we are about to consider, will render this position perfectly evident. To some, the distinction we are endeavouring to make between a direct and secondary result may appear unnecessary, as the consequences to the system remain the same whether the secondary action be traced to the medicine exhibited or to the physiological effect which that medicine has produced; it nevertheless appears to us desirable to preserve the distinction rigidly, for the purpose of avoiding the absurdity of calling that a secondary medicinal effect which only occurs after medicinal action has ceased; further, as there are phases of medicinal action belonging to the same agent, the expression will commonly mislead.

Following the plan which we adopted in the first part of our essay, of considering each subdivision specially, we proceed to the discussion of those agents that possess the peculiar property of inducing a condition of "stupefaction" from their direct influence upon the brain and nerves.

NARCOTICS.

Although the use of the term "narcotic" is constant, there appears to be some difficulty in defining its precise signification. According to the ordinary explanation, "narcotics first excite and then depress the nervous functions;" a definition which, while it includes a phase of narcotic action, does not

indicate the essential and characteristic effects of narcotic drugs. We have already noticed the fact that depression or diminished action is a necessary sequence of excitement, and hence to a certain extent the definition would apply to all stimulants whose influence is principally confined to the nervous system. According to some writers "narcotic" has numerous synonymes. M. Tabourin, for instance, uses the terms, "anodyne," "calmant," "sedative," "stupefacient," "soporific," as expressive of the effects of narcotic drugs under different conditions of the system.

If we were required to select from among those words one that would convey the most definite idea of narcotic action, we should point to "stupefacient," for the reason that a certain cerebral derangement, productive of a condition that we should familiarly term "stupefaction," is observed whenever narcotic action is fully developed. The stimulant effect is often slight, so slight and evanescent as to escape notice; while the depression, or whatever else we may call the secondary effect, is marked, and continues for a much longer time, being evidently the result of medicinal influence, and not the mere consequence of a previous excitement, to which, indeed, it bears no proportion. In some states of the system, and in some animals more than others, the excitant effect is very noticeable; and among narcotic agents we observe some to be distinguished by the power of stimulating and exalting the nervous and mental functions to a remarkable degree; while others of the same class are almost immediately sedative in their influence. We have occasionally met with instances where chloroform has produced only a powerful stimulating action, contrary to all expectation; in tetanus, for example, if the agent be given in the ordinary way of inhalation, an immediate paroxysm occurs, and continues in spite of every effort to bring the patient under the anæsthetic influence; the use of the same drug, however, in the form of enema, in similar cases, is not attended with any such consequences; no preliminary excitement is evident, but the sedative effect is at once produced, and continues during the repeated administrations of the medicine for however long a period. In instances of acute intestinal spasm that have resisted the ordinary remedies for some hours, we have had reason to regret the attempt to induce anæsthesia by chloroform, in consequence of the immediate increase of the already extreme excitement, and its continuance in defiance of our perseverance with the inhalation of the agent, until enough had been respired to render the atmosphere of the stable intoxicating to the attendants.

The action of opium, under some circumstances, is that of an excitant to the brain, occasioning a peculiar form of mental disturbance, in which the patient suffers from an excessive development of ideas of no definite character, associated with an extraordinary mixture of real and imaginary circumstances; and while conscious of extreme fatigue, is at the same time afflicted with a distressing desire to remain in a state of active and watchful wakefulness. Notwithstanding these peculiar phases of narcotic action, arising from certain modifications of nervous function, we may consider that the essential effect is diminished activity, or the production, in reference to some functions of the organism, of the element "defect." Although, from what we have stated, it might seem more proper to place narcotics in an intermediate position, between diffusible stimulants and direct sedatives, still as the absolute and definite action is ordinarily the reverse of stimulant, we feel it to be more convenient to permit them to remain in the second group of medicinal agents, rather than to isolate them entirely.

The narcotic medicines enumerated in Morton's 'Pharmacy' are camphor, henbane, deadly nightshade, and opium; to these we may add tobacco and chloroform, as they each produce a certain numbness or stupefaction after a preliminary excitement, usually of short duration.

The full development of the physiological action of narcotics only occurs under certain conditions; to wit, large doses of the agent, and a susceptibility of the system to its influence. Ruminants are not held to be capable of full narcotism, but they alone are exempt, and even in their case it is not asserted that no soothing action follows the use of narcotics, but only that the indications present in other animals under narcotic influence are not observed to anything like the same extent. Among the most important of these indications, M. Tabourin mentions general numbness, obtuseness of the senses, dilatation of the pupils, vertigo, loss of instinct and intelligence, difficulty in standing, tremors, spasm, weakness of the posterior members, partial paralysis, relaxation of sphincters, gradual decrease of temperature, cold sweats, death. It will be observed that these indications accompany the toxical action of narcotics, and are necessarily associated with excessive, and therefore non-medicinal doses; how far such a system of experimentation is valuable, in reference to therapeutics, we leave others to determine, for our own part we cannot avoid the conviction that these exaggerated and distressing symptoms belong to the poison and not to the medicine.

The therapeutic action of narcotics is somewhat extended,

and the various grades of that action are, under different conditions of system, exceedingly desirable; always upon the assumption that the main object is to diminish some exalted or excited function.

As "calmants," narcotic agents are valuable in small doses, when any undue excitement of nervous action is present. After operations it frequently happens that much nervous excitability is consequent, not so much upon pain or inflammation, as upon the recollection of the violence that has been necessarily used, dwelling upon the animal's mind, and occasioning alarm upon the slightest movement or sound. A slight wound, or other comparatively trifling accident, or unimportant disease, will, in animals of a certain temperament, produce these symptoms, and interfere with the progress of the cure. In such cases, small doses of chloroform, opium, or henbane, act immediately, by lessening the nervous impressibility and calming the excitement.

As "anti-spasmodics," narcotics are particularly valuable; their action, indeed, is almost unfailing in intestinal spasm. Opium generally at once diminishes the excited irritability of the muscular fibre, most probably by lessening the nervous action, and thus removing the stimulus. In the extreme and continuous spasm of tetanus, belladonna has been found to modify the paroxysms; opium has also been effectual for the same purpose, and chloroform when introduced by enema, so as to avoid any of the stimulating effects which follow its inhalation, is immediately successful in decreasing the excitement and causing at least partial relaxation of the muscles.

As "stupefacients," narcotics are indispensable when excessive pain is an accompaniment of injury or disease, as during its existence we shall seek in vain to lessen or remove the affection upon which the pain depends, and than which in reality it is commonly of greater moment. Nothing is more familiar than the fact that death frequently follows injury or disease of an unimportant part of the body, solely from the pain with which the derangement is associated. To lessen the sensibility, to deaden or "benumb," is to render the animal in a measure unconscious of the disease, and, at the same time, to remove all danger of the serious result that otherwise might prematurely happen; the actual malady may be attacked with confidence and deliberation, as the surgeon is no longer disconcerted by an observation of suffering upon which his remedies exert no ameliorating influence.

It does not appear that narcotics, even carried to the extent of anæsthesia, interfere with the actions of other remedies, so that where pain become so important an element in a disease,

no apprehension need be entertained if the patient can be brought completely under narcotic influence, although during the extraordinary systemic excitement associated with pain this is not at all times easy to effect; nor have we found large doses to be more powerful for the purpose than small ones; on the contrary, smaller quantities seem to excite less disturbance, and produce the desired effect more certainly. The full development of narcotic action will seldom be necessary in veterinary practice, as it is not required that we should combat the distress which in man results from the absence of sleep; so far as the benumbing action is concerned, we may safely proceed, even to the production of insensibility, but the peculiar effect upon the sensorium, so characteristic of narcotic influence in the human subject, only occurs to a very slight extent in the lower animals.

The drugs which are most active in occasioning the numbness or stupefaction, are chloroform and tobacco, particularly the latter, whose action we have noticed to be most marked in the form of tobacco-smoke enema; none of the other agents have seemed to us to produce a condition so resembling full narcotic action in man—a certain drowsiness and insensibility invariably follows its use, without any marked preliminary excitement. Opium in two-drachm doses, given by the mouth or as an enema, is very useful in allaying pain, but several doses are required before its action is apparent, while the effects of tobacco smoke are almost instantaneous. Chloroform in quantities of half an ounce mixed with a little olive oil and injected into the rectum, we have found to induce a sleepy state, which could be indefinitely prolonged by occasional repetitions of the agent after the action is fairly apparent, which will be probably after about three or four doses have been given at intervals of an hour or less. We have succeeded in placing puppies suffering from colic, under the influence of chloroform, by allowing them to inhale a few drops upon a small piece of sponge, but in our experiments upon the horse under excitement of any kind, we have never been able to advance beyond the preliminary stage of stimulation when we have given the agent in the form of vapour. As an enema, however, the drug may be used without fear of any such action occurring.

Locally, the anodyne effects of narcotic agents render them of great efficacy in cases of irritation of the skin or mucous membrane; infusions of opium or digitalis, used warm or cold according to circumstances, liniment of belladonna, chloroform and olive oil to form a liniment, and the vapour

of camphor, are of acknowledged value in those instances of local excitement, and act by directly diminishing the morbid sensibility of the part; camphor vapour is specially applicable to disease of the mucous tissue, for example, to the various forms of catarrh, nasal, laryngeal, or bronchial. The vapour may be brought in contact with the membrane most conveniently, by sprinkling the powder upon the flue of the hot-air bath heated to near 100 degrees, or it may be sprinkled upon a little hay on the surface of hot water, and, by a simple contrivance, conveyed into the air-passages in the ordinary process of steaming the nostrils; by the aid of a horse-rug or a sack, one end of which incloses the vessel containing the fluid, while the other is drawn over the animal's nose. A still more complete anodyne action will follow the use of a mixture of camphor and chloroform applied in the same way; two drachms of camphor may be dissolved in an equal portion of chloroform, and poured on the surface of nearly boiling water, the vapour from which containing the two agents, both being easily volatilized, is inhaled by the animal usually without any resistance after the first effect of the novelty has passed. Of the beneficial effects of the treatment of catarrh by camphor inhalation, it is impossible to speak too highly.

The various plans for introducing narcotic agents into the system are not matters of fancy or even of convenience only. We have seen in several instances, that the therapeutic effects are in a manner regulated by the method of administration.

The complete control which we possess over the development of narcotic effects enables us to arrange with tolerable certainty for the production of any phase of action we may desire, by apportioning the dose, and by the different methods of introducing the agent into the system, viz., by the mouth, by enema, in the form of vapour, and as a lotion or liniment.

By the mouth, where our object is to lessen excitement, or diminish general sensibility, employing opium, hyoscyamus, or chloroform.

By the rectum, when a more completely benumbing effect is desired without the risk of a previous excitation. In this way, chloroform and tobacco vapour or opium, have proved to be exceedingly valuable.

By inhalation, when a direct action upon the respiratory membrane is sought, or complete anæsthesia necessary; the medicines so carried into the system are camphor or chloroform, or both in combination. It will be remembered that anæsthesia cannot be induced when any extreme excitement exists in the system, previous to the attempt at inhalation.

In the form of lotion or liniment, narcotics we have found to be available in irritation of skin. Such agents as opium, belladonna, and digitalis, in combination with various proportions of water, are often very efficient in allaying local excitement.

Thus, from their valuable properties, the ease with which their effects may be regulated, and the variety of methods by which they may be exhibited in the numerous derangements which call for their use, narcotics assume an important position among therapeutic agents, nor is their value lessened by the circumstance of their being little appreciated by the empiric; on the contrary, their want of popularity exempts them from the abuses we have had to deplore when remarking upon some of the divisions of the first group.

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 147.)

Before resuming the consideration of plants which yield food for our domestic animals, allow me briefly to correct a slight error into which Mr. Strangways has fallen, when he "calls in question our toxicological opinions," in his observations in your last month's Journal, on the cases recorded by myself and Mr. Howell of the injurious effects produced on cows from eating a large quantity of the *Althæa rosea*. From a perusal of the case recorded by me it will be found that I carefully avoided giving any toxicological opinion whatever. Having fully satisfied myself that the injurious effects had been caused by the animal partaking of a large quantity of the *Althæa rosea*, I thought it of sufficient interest to the profession to relate the case, and thus bring it under the notice of more able toxicologists than myself to determine the nature of these effects. My chief object, however, was to avail myself of the opportunity of bringing under consideration the botanical characters of the plant, and the natural order to which it belongs. These cases, I am inclined to think, do not unfrequently occur; they are of much interest, and well worthy the attention of the profession, and I am assured, from my own experience in this as in other cases, that the veterinary surgeon will feel himself much better able to give

satisfaction to his employer by bringing his knowledge of the science of botany practically into use.

Leaving for a time the natural order Leguminosa, to return to it again when considering the plants whose seeds yield a supply of food, I purpose now noticing the plants whose stems, leaves, and roots are largely cultivated as articles of food for certain classes of our domesticated animals. Occupying a prominent position amongst these, are the different varieties of the *turnip*. This plant belongs to the class of EXOGENS, and to the sub-class *Thalamiflora* ("flowers furnished with both a calyx and a corolla, the latter consisting of distinct petals; stamens always *hypogynous* or united to the sides of the ovary"), and to the natural order CRUCIFERA (cressworts), which may be known by the following characters —*Sepals* four, deciduous. *Petals* four, cruciate. *Stamens* six, of which two are shorter, solitary; and four longer, in pairs. *Disc* with various green glands between the petals, and the stamens and ovary. *Ovary* superior, with parietal placentæ, usually meeting in the middle, and forming a spurious dissepiment. *Stigmas* two, opposite the placentæ. *Fruit* a silique or silicule, one-celled, or spuriously two-celled, one or many seeded; dehiscing by two valves separating from the frame, or indehiscent. *Seeds* attached in a single row to each side of the placenta, generally pendulous. *Albumen* none. *Embryo* with the radicle folded on the cotyledons. *Herbaceous* plants, annual, biennial, or perennial, very seldom suffruticose. *Leaves* alternate. *Flowers* usually yellow or white, seldom purple, without bracts."—(*Lindley.*)

The *cruciate* arrangement of the sepals and petals, and the *tetradynamous* stamens (four long and two short ones), will distinguish this from all other natural orders.

Good examples of this order may be seen in the *wallflower*, (*Cheiranthus cheiri*), which at this period of the year gives so much fragrance and beauty to our flower-gardens. This very natural assemblage of plants is distributed over most parts of the temperate regions of the world. Between two and three thousand have been described, and about eight hundred of them have been introduced into or are growing wild in this country. Most of the seeds of the plants contain a fixed oil, and from some it is expressed and largely used in commerce; such is rape oil. They also contain a pungent volatile oil, which renders many of the plants much valued as esculents, such as the mustard, horse-radish, and the cresses. It is this stimulating principle which produces the rubefacient properties of the mustard, and is also probably the source of the antiscorbutic properties which many plants in this order are said to possess.

The acridity of this volatile principle can be much modified by cultivation. All the plants abound in mucilage, and the roots of some in saccharine principles. Many of them are largely cultivated as food for animals, as the turnip, cabbage, &c.; and others, as the wallflower, stocks, &c., for the fragrance and beauty they impart to our flower-gardens. "Most kinds contain sulphur and nitrogen, and give out in decaying a smell resembling animal matter."

(*To be continued.*)

ON PARTURITION.

By C. Dickens, M.R.C.V.S., Kimbolton.

If any excuse be required for again referring to this important division of our science, it having recently occupied so great a space in your Journal, it must be the return of that season when doubtless many of your provincial readers will be summoned to attend such cases as those reported and so freely commented on by your northern contributors.

We know that the most distinguished professors of human obstetrics, as well as ourselves, occasionally meet with novel and perplexing cases; but with us the sad drawback exists of seldom being consulted until all the men of any notoriety in the neighbourhood have exhausted their skill, and arrived at the conclusion that no man in England can accomplish that which they have failed in doing. Hence the great necessity that those who profess to render assistance on these occasions should not only possess anatomical and physiological knowledge of the organs of generation, but also have had a practical training in cases of difficult labour.

After some years of practice had expired, I was egotistic enough to think that I had witnessed every form of false presentation in the mare, until the following case occurred, which, being somewhat dissimilar to any of those already referred to, I forward for your insertion in the *Veterinarian*.

February 11th, 1861.—A client, residing ten miles distant, required my immediate assistance to a very valuable mare in foal to the Duke of Bedford's horse "Hesperus," she being within a month of her time. I was told that she had been "paining" about four hours, and that, seeing something was

wrong, the owner would not allow any attempts to be made by others until my arrival.

I found that the fœtus was lying on its back, with an inclination to the left side, and that the head was partly protruding. The vagina was tenanted chiefly by the *hind* feet, which passage, for so large a mare, was very small. Was this a case requiring some consideration prior to commencing any operation?—or do I hear some one say nothing is more easy than to detach the head, put the neck back, and bring the fœtus forward breech first?—or perhaps another telling me to push the quarters back, and then get up the fore legs. To the first I answer, it is impracticable; to the second, it is impossible. From the extreme length of both fœtus and mare, the shoulders were not within reach.

Oh, Messrs. Editors, how glad I should many a time ere now have been, when for hours together exercising all the strength, patience, and perseverance in my power, to have had one of these easy going, overcome-obstacle, clever men by my side. What exhaustion, tender fingers, stiff wrists, and sore shoulders, such a one would have saved me; but few persons know better than yourselves what these cases are: these turnings, bringings forward, &c., are much more easily carried out on paper that in practice.

I will now proceed to tell you how I did act, and, as my proceeding was successful, so, should another case of the kind occur, in the absence of being better taught by yourselves or other practical friends, I shall do the like again.

I first placed a cord on the right hind leg, which was then brought forward by an assistant and held firm, whilst I divided the tendons above the os calcis, and detached the limb at the hock-joint. The same plan was pursued with the opposite leg. Room being thus obtained, I was enabled, after a good deal of trouble, to put a cord around the right fore leg and bring it forwards. The other limb was obtained with less difficulty. I next made an incision through the whole length of the abdomen and removed the viscera, thus still further diminishing to a great extent the size of the fœtus, and which enabled me to depress the stumps of the limbs sufficiently to prevent injury to the rectum or vagina of the mare during the further removal of the fœtus. The mare was convalescent in the course of a few days.

Position.—This, as a rule, should be left to the judgment of the operator. Cases occasionally occur which justify means which at other times might be censurable. We read, for example, of some persons recommending casting, or placing the patient on her back, with the legs secured to a

beam overhead. This plan is, I fear, to be considered more cruel than useful. The system I generally pursue is to place the mare (if the case is at all likely to be protracted) under an open shed, tying her head to the manger or rack, and supporting her by two sacks, with ropes attached, under the belly, the latter being fastened to a beam. I prefer to have a partition on the *off* side, to prevent swerving, the assistant being placed on the *near* side. I then put immediately behind her a strong, four-post, wooden cow-crib, which admirably answers many purposes. First, it keeps the mare from backing, and second, by the operator standing in it he is perfectly safe during his manipulations from injury.

I was first induced to try this when in attendance on a very vicious mare, and prefer it to the use of the hobbles, especially as it forms an excellent elevator for those who, like myself, do not rejoice in lofty stature, which, with tall mares, is an important consideration. It also forms a very convenient stage for placing at your feet any cords, instruments, medical agents, or other *et ceteras* that may be required, for it is too often the case, if these are committed to the care of bystanders, they are not to be found when wanted.

INJURY TO HORSES ON A SEA-PASSAGE.—FRACTURE OF THE OCCIPITAL BONE.

By H. W. Dyer, M.R.C.V.S., Waterford.

On the 7th of last month the steamer "Gipsy" arrived here from Bristol, having on board the No. 8 Battery of Royal Artillery, amounting to about a hundred horses. The passage across the Channel was one of the most tempestuous ever known. As many of the horses were on deck, these were necessarily more exposed to the violence of the storm than those placed in the hold of the ship, while those stationed "forward" were of course worse off than their neighbours in midships.

During the passage the temporary board roofing which sheltered the animals forward was blown off, and many of them became restive and got loose. I was told that as many as thirty horses were untied and knocking about the deck. Two unfortunately became so much injured that they were incapable of resuming the position generally maintained on board ship. This caused them to struggle violently, during which their heads became frightfully injured, and also their bodies, arising from their efforts to rise and the trampling of their comrades.

The commanding officer having sent a message to me requesting my service, I found on arrival that many of the animals were totally incapable of standing, even when supported by several assistants, and that the injuries to the nervous and muscular systems were so serious as to prevent the possibility of their removal from the deck of the ship to land without the aid of a float. This being at length accomplished, they were taken one at a time to my infirmary, and their comfort, &c., carefully attended to. I found, upon examination of a mare, that she had been so much injured about the cranium that I despaired of her life from the first. She died the next day, after much suffering. The *post-mortem examination* disclosed a fracture of the cuneiform process of the occiput, near its junction with the sphenoid bone. The surrounding textures were intensely inflamed, and especially the meninges of the brain and spinal cord.

This is the only case of fracture of this bone I have ever met with.

I examined every other part of the animal in presence of the commanding officer and the farrier, and asked of them if the mare was not of an excitable disposition, and also if she was not very thick-winded and a roarer. To these three queries, answers in the affirmative were given.

I need not state that my reason for asking these questions was from the appearances presented in the heart, lungs, and larynx. I found the mucous membrane of the bladder in a peculiar state, resembling that produced by the dotting of white paper with ink. The large intestines were also inflamed in patches. The liver was softened, and so were the kidneys. These important organs being so changed in structure would, I think, account for the death of the animal in so short a time, because the fractured bone was not displaced.

A gray gelding, having no fracture, and being apparently healthy otherwise, lingered until the 12th, when he died. This animal was injured in the spine, besides which the integumental lesions were so severe that almost the entire surface of the body, just before death, suppurated.

FURTHER OBSERVATIONS ON THE IMPROVED HORSESHOE.

By H. Withers, M.R.C.V.S., V.S. Royal Artillery.

In last month's number of the *Veterinarian*, your correspondent, Mr. Broad, seems to doubt the possibility of

keeping my improved (?) horseshoes on the feet. I can only say that, if a moderate amount of care is taken in making and nailing them, according to the directions given, they will remain on readily enough. I have found it advantageous to make a few alterations in the original shoe; for instance, the toe-nail holes I have had countersunk and placed close to the division, so as to allow of a strong clip being turned at the toe without weakening that part of the shoe. The fullering also is only carried as far as the second front nail-hole, and the bevelling on the inner surface not quite to the toe part. I also make the division somewhat in the form of the letter S.

I always use these shoes on my own horses. I have only lost one half shoe in seven months, and that occurred before I used any clip to the toe.

I am perfectly convinced of the benefit to be derived from using the divided shoes, especially in cases of badly formed and contracted feet, and also for general use. I only wish them to have a fair trial.

PIECE OF WIRE FOUND IN THE HEART OF A HEIFER.

Communicated by Robt. H. Cowell, Veterinary Student.

The heart I present for your examination belonged to a three-year-old short-horned heifer, the property of Mr. John Seabrook, of Boreham, near Chelmsford, Essex. She was tied up to fatten in January last, and from that time until the date of her recent acute attack had always gone on remarkably well, excepting about three weeks since, when she was observed to be slightly indisposed and to be off her appetite for a few days, but having been recently placed upon mangold wurtzel, little or no notice was taken of this, her owner attributing her indisposition to the effects of the mangold.

My father's attention was called to the animal on Tuesday, the 2d of April, as he was passing by the residence of her owner. He found her presenting the following symptoms:—breathing hurried and laboured; pulse rapid, weak, and scarcely perceptible at the jaw; Schneiderian and conjunctival membranes injected; eyelids swollen and nearly closed; great difficulty in rising; and constant rigors. Seeing but little chance of recovery, and as she was very fat, he considered it best to have her killed.

The only account of the *post-mortem* examination which I have been able to obtain is that there was a considerable deposit of lymph between the heart and the pericardium, and also a tolerably firm adhesion between these two organs, the extent of which is indicated by the white appearance of the external surface of the heart. The pericardium was likewise adhering to the sternum by extensive effusions of the same character. The animal was quite fat, and had accumulated flesh much faster than another heifer which stood in the same stall with her. No examination was made either of the diaphragm or stomachs, with a view of ascertaining if these organs were free from any lesions.

[The whole of the external surface of the heart, but especially its right side, was covered with a thin layer of flocculent lymph. The pericardium had been removed, and was not forwarded with the organ; but doubtless a similar deposit had taken place on its inner surface, so as to unite the sac partially to the heart. One end of the piece of wire was protruding from the wall of the *left ventricle*, at its lower third, to the extent of about half an inch, and the other end had penetrated and was located in the *carnæ columnæ*, extending obliquely upwards to their summit. It was of the size known as No. 16, and was three and a half inches in length. Its track through the wall of the ventricle and carnæ columnæ was marked chiefly by the presence of some clotted blood. A small amount only of congestion existed in the surrounding muscular structure, and here and there, both in the substance of the outer wall and also in the septum ventriculorum effusions of lymph to about the size of a pea had taken place, which in two or three places were changing into pus. The lining membrane of the left ventricle was, however, free from disease, as was that of both auricles and likewise of the right ventricle. A little below the place of entry of the wire another small, punctured wound existed, which evidently was produced by the same agent. This wound did not, however, extend more than the fourth part of an inch into the muscular structure of the heart, and, like the large one, it was also surrounded only with a slight amount of congestion.

Similar foreign agents have occasionally been found in the heart of the ox, and it would appear that metallic substances, having been swallowed with the food, they, after a time, penetrate the coats of the *reticulum*, and next the diaphragm, on its left side, thus entering the thoracic cavity near to the apex of the heart.]

POISONING OF CATTLE WITH OIL CAKE.

Communicated by J. W. Anderton, Veterinary Student.

In the early part of February, my brother, who has been superintending my practice during my stay at the College, was called to some cows, in consequence of the sudden death of two, and the illness of five others. They were the property of Mr. Ralph Ludlam, of Arncliffe Coate, and had that morning been fed for the first time on some newly purchased oil cake, sold as food for cattle under the name of rape cake. The cake was bought on the 2d February, at Skipton, and on the 5th seven pounds of it, as near as can be calculated, were eaten by seven cows, shortly after which they were observed to have a great flow of saliva from the mouth, and to be seriously indisposed. On visiting them five hours afterwards, my brother found that they all gave symptoms of acute abdominal pain, accompanied with much distress of breathing and great acceleration of the pulse. One died twelve hours after partaking of the cake, and the other seventeen hours afterwards. The cows were in three different sheds, with other cattle, and the above symptoms were portrayed by those only that had partaken of the cake. Under the circumstances, my brother sought the advice of Mr. H. Fishwick, M.R.C.V.S., of Burnley, who, besides advising as to the treatment of the affected animals, assisted in making a *post-mortem* examination. The cow that died last was first examined, when it was found that all the stomachs were greatly inflamed, and bowels more or less so in patches. The mucous coat could easily be stripped off, and even separated of itself from the others when the cut parts were lifted up. The œsophagus and trachea were also much inflamed. The lungs were congested. The heart was soft, and contained a little blood in its ventricles, which was partially coagulated. The ingesta was normal in quantity and consistency, but, from its fermentation, had given rise to a good deal of tympany of the rumen. The cow that died first presented similar appearances, but the inflammation of the mucous membranes was far more intense.

There being little doubt as to the cause of death, the following certificate was handed in by Mr. Fishwick:

"Burnley; *Feb.* 7, 1861.

"I hereby certify that I have this day examined (*post mortem*) two white cows, the property of Mr. Ralph Ludlam,

of Arncliffe Coate, near Skipton, and I am of opinion that death resulted in both cases from poison contained in the food.

"Hy. Fishwick,
"Veterinary Surgeon."

PROFESSOR TUSON'S REPORT OF THE ANALYSIS OF THE CAKE.

"I have chemically examined a sample of oil cake received from my colleague, Professor Simonds, and said to have caused the death of two animals who had eaten of it.

"By ether an oil was extracted, in which a considerable quantity of sulphur was easily detected, by converting it into sulphuric acid, and precipitating with chloride of barium.

"A quantity of the crushed cake was boiled with water in a retort; the fluid which distilled over was strongly impregnated with an oil possessing a powerful alliaceous odour.

"When submitted to microscopical examination, the sample of the so-called rape cake was found to consist chiefly of black and white mustard husks.

"In conclusion, there is abundant evidence, both chemical and microscopical, of the cake being largely adulterated with mustard."

APPOINTMENTS OF VETERINARY SURGEONS TO THE INDIAN ARMY.

India, *February* 1, 1861.

Dear Sirs,—Can you inform me why there has not been a single promotion made in the veterinary department of the Indian army under the Royal Warrant of 1st July, 1859? The warrant was published in general orders, and made applicable to our army, in March or April last year, but up to the present time not a member of our profession has benefited in any way by it. Is it because we have no head through whom to agitate the matter, or is it the result of apathy on the part of ourselves as a body? If a veterinary surgeon of upwards of five years' service wishes to be promoted, how should he proceed in applying for it? I and many others in the service will feel much obliged if you can enlighten us on these points.

Some of your military readers at home will be able to

decide the following, which out here is a disputed point:—A lieutenant of two and a half years' standing, and I, a veterinary surgeon of six years', were members of a board the other day. Which was the senior?—and who should have voted first, and signed last? The president ruled that *I* was the junior.

I am, dear Sirs,
Yours very truly,
A SUBSCRIBER.

To the Editors of 'The Veterinarian.'

[We hope these questions will be answered by the Veterinary Surgeon-General, or other proper authority.]

Facts and Observations.

THE BITE OF RABID ANIMALS NOT ALWAYS FOLLOWED BY HYDROPHOBIA.

A FACT well worthy of notice is mentioned in the last annual statistics furnished by the General Hospital of Vienna. It would appear that out of 115 persons bitten by animals whose rabid state was clearly made out, only 25 died with symptoms of hydrophobia. As, however, the actual and precise length of the period of incubation in rabies is not known, these figures cannot be completely relied upon; but it is highly useful to note the comparatively small proportion of deaths which occurred after the well-ascertained inoculation with the poison.—*Lancet.*

EXPERIMENTS ON HORNED CATTLE.

M. BAUDEMONT, a gentleman who has made the rearing of cattle his peculiar study, recently communicated a paper to the Academy of Sciences, on the relation which exists between the development of the thorax and the general condition of the animal. In France, England, and Germany, various opinions have been expressed, which are all reducible to the following proposition:—The development of the thoracic region affords the measure of the volume of the lungs; with these stand connected, like cause and effect, the functional energy of the animal, the activity of its respiration, the richness of its blood, its power of assimilation,

and consequently its vernal value as a consumer of fodder and a producer of flesh. In order to obtain the truth of this proposition, it was necessary to ascertain by experiment whether the development of the pulmonary organs really coincides with the development of the thoracic region. M. Baudemont, therefore, commenced a series of experiments on 102 individuals of various breeds of horned cattle, from which he has deduced the following conclusions:

1. As the animal gains in thoracic circumference, weight, and surface, its lungs generally increase in size, but not in the same progression as those three elements. Hence the development of the thorax does not give the measure of the development of the lungs.

2. The weight of the animals being the same, the lungs are large in proportion to the height of the animal.

3. They are larger in proportion as the animal is younger.

4. In subjects of about the same age and in a nearly equal condition, the absolute weight of the lungs is generally less in proportion as the thoracic circumference is greater, the relative weight (that is, to the weight of the whole live animal) is always less.

5. In those breeds which weigh less, the lungs are proportionally heavier.

6. Among oxen of the same breed, the lightest lungs belong to the heaviest animals, and conversely.

7. Among oxen of precocious breeds, the weight of the lungs is inferior to that of slower breeds.

8. Hence those animals which are most remarkable for their weight, precocity, and development of the thoracic regions, are precisely those the lungs of which are smaller.

9. Therefore in these the activity of respiration is less than in others, so that the fattest animals are those which breathe least.

TREATMENT OF PRURITUS.

We find the following lotion recommended in the *Gazette des Hôpitaux* for cases of local pruritus. Instances of this kind are not unfrequently met with among the lower animals, affecting the anus, vulvæ, &c., which are often exceedingly difficult of cure:—Take of bruised white hellebore 20 parts, water 750 parts; boil down to 500 parts, strain, and employ as a lotion.

ALCOHOLIC FERMENTATION.

M. Pasteur, who has made this his special study for some years, announces that the generally received opinion that *cane* sugar, $C_{12}\ H_{11}\ O_{11}$, after being modified into *grape* sugar, $C_{12}\ H_{12}\ O_{12}$, when mixed with yeast, ferments, and splits up into alcohol and carbonic acid, the sum of the weights of which represent very nearly the weight of the sugar, is only a rough approximation to the truth; and that amongst the products of the fermentation are *glycerine, succinic acid, cellulose,* and some other undetermined matters—100 grammes of sugar-candy, fermented with 1·198 grammes of dry yeast, gave after fermentation—

Glycerine	3·640
Succinic acid	0·673
Cellulose, &c.	1·633
	5·946

The elements of these bodies being furnished solely by the sugar. M. Pasteur is still engaged in the study of the transformations which sugar undergoes inconsistent with the theoretical equation $C_{12}\ H_{12}\ O_{12} = 4\ CO_2 + 2\ (C_4\ H_6\ O_2)$.—*Chemical News.*

CELLULES OF PUS IN THE ATMOSPHERE.

Cellules of pus in the atmosphere of an hospital have been discovered by Dr. Eiselt, of Prague, by means of Pouchet's aëroscope. He considers them to have been the means of propagating ophthalmia amongst the children of the Foundling Hospital at Prague, ninety-two cases having occurred out of 250 children. Appreciating the importance of the discovery, several members of the Imperial Society of Physicians at Vienna have agreed to meet to examine into the researches of Dr. Eiselt, and to report the results.—*Cosmos.*

PROPAGATION OF FISH AS FOOD FOR THE PEOPLE.

The Agricultural Society of France has just had the different rivers of the Basses Alpes stocked with 740,000 eggs of the Fera, one of the best kinds of fish in the Swiss lakes, and belonging to the same family as the salmon.—*The Press.*

THE VETERINARIAN, MAY 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —CICERO.

SALE OF DISEASED MEAT.

THE exposure and punishment which have recently attended the reprehensible practice of sending the carcasses of diseased animals to the metropolitan meat markets cannot fail to produce a beneficial result. For many years past, as well as during the present, enormous quantities of such meat have been disposed of; and not only in London, but also in country towns, especially in our great seaports and manufacturing emporiums. That numerous cases of disease in man are traceable to the quality of the food on which he subsists, no one can doubt; and we are glad to see the energy which has been displayed to put a stop to such an injurious system. In a previous number we alluded to this subject, and ventured to suggest that only such persons as had received a medical education, and were conversant with the diseases of the lower animals, should hold the appointment of inspectors of our meat-markets.

We also stated that, beneficial as was a veterinary supervision of our cattle-fairs and markets, that it tended to the "home slaughtering" of diseased animals, with a view to a more easy and safe disposal of them. Surely it is high time that additional means should be adopted by those in authority to meet the evil in its several ramifications. The severe animadversions on the agricultural community which have appeared in many of the public prints may be uncalled for, but we fear there is a class of farmers who are not overscrupulous on matters of this kind. They quiet their conscience by the assurance that they are not the immediate purveyors of the unwholesome meat, by disposing of it to some low-class butcher, taking care, however, that the price he pays is far above its real value. We have a case somewhat to the point in the recent trial of Thomas Spencer, which we append:

CENTRAL CRIMINAL COURT.—April 12.

(*Before* Mr. Justice Williams.)

Thomas Spencer, a fishmonger, at Hitchin, in Hertfordshire, surrendered to take his trial for misdemeanour, in having unlawfully sent a quantity of diseased meat to Newgate Market for sale as human food.

Mr. Sleigh conducted the prosecution on behalf of the Corporation of London. Mr. Cooper was counsel for the defendant.

It was proved that, on the 16th of February, a hamper, containing a quantity of meat in a very diseased state, was consigned to Mr. Greatorex, a highly respectable meat-salesman in Newgate Market, who, upon opening the hamper, at once saw that the meat was not fit for human food, and he gave notice to Mr. Fisher, one of the inspectors of the market, who seized the meat, and it was ordered to be destroyed. The hamper of meat appeared to have been consigned to London by the defendant, and Mr. Fisher went down to Hitchin and saw him upon the subject, and he said that he had merely killed and dressed the animal *at the request* of a person named Peck, a farmer and publican, residing near Hitchin, and that he had nothing more to do with the matter. The same defence was now set up on his behalf, and an endeavour was also made to show that the animal was not in a diseased state at the time it was slaughtered, and Peck, the owner, and a butcher named Taylor were called as witnesses for that purpose, and they swore that the cow had nothing the matter with her except a broken rib, caused by being trampled upon in the railway truck, and that the meat was in good condition at the time it was sent away. Upon being cross-examined, however, it appeared that the animal was purchased for £4 5*s*, as a sort of speculation, and that she was unable to get up at the time she was slaughtered; and it was evident from the mode adopted to send the carcass to market that the parties knew pretty well that there was something wrong in the transaction.

The jury, after some deliberation, returned a verdict of guilty against the defendant, but at the same time strongly recommended him to mercy on the ground that he had been made a tool of by Peck, who, they thought, ought to have been placed in the dock with him.

Mr. Sleigh said that he agreed in the opinion that had been expressed by the jury, and had stated so to the City Solicitor, by whom the prosecution was conducted.

Sentences.

The prisoners *Thomas Spencer* and *Morgan Blandford*, who had also been convicted of sending diseased meat to Newgate Market for sale, were placed at the bar.

His lordship, in passing sentence, said that the case of the prisoner Spencer was very different to the other one, and he agreed with the jury that it was very probable that he had been made a dupe by the man Peck. The sentence upon him, therefore, would be imprisonment for a fortnight in the gaol of Newgate. With regard to the other prisoner the case was very different. He had been guilty of the same act before, and had been cautioned; but, notwithstanding that caution, it appeared that, for the sake of putting money in his pocket, he persisted in sending this diseased meat to market, regardless of the evil and mischief that might be occasioned to the poorer classes, who alone were likely to purchase such poisonous matter. He then sentenced this prisoner to six months' imprisonment in Newgate.

The '*Medical Times and Gazette*,' in directing attention to diseased cattle and unwholesome meat, states that—

"All over the country cattle are dying from the effects of inclement weather and insufficient food, and whenever the carrion can be sold for human food the temptation is too great for the bucolic conscience to resist. The elaborate report of Dr. Headlam Greenhow throws doubt on the noxious quality of the flesh of animals dying of disease; but it is evident, from the testimony of skilled witnesses, that the diseases of which cattle are now dying produce not merely emaciation, but a positive sourness and unwholesome quality. Our informant, visiting a very clean slaughter-house, where there was abundance of good meat, noticed a peculiar dissecting-room smell, which proceeded from a tub filled with pork in a disgusting state, and partly black with ecchymosis. This was seized, and some healthy looking pork, macerated in the same tub of water, was seized likewise, because impregnated with the putrid water, although the butcher remonstrated loudly. In the same district some veal was seized which was but a day or two old, and some mutton from a sheep which had been crushed to death in a railway-van. The femur was smashed, and the meat black with extravasated blood. Some Welsh legs, dressed as lamb, with a little wool fastened round above the hoofs, were not seized, but left, in order that the honest ingenuity of the butcher in manufacturing 'lamb' might meet with its reward from a discerning public. The practical questions that arise are these: first, the necessity of stricter supervision at railway termini and steam-packet wharves; next, a more full and efficient superintendence of the great central markets, and a frequent visitation of local slaugter-houses and low butchers' shops by parochial sanitary inspectors; and, lastly, something like reasonable security that condemned meat shall be so destroyed as not to enter in any way into the composition of human food. At present, it is next to certain that some which is boiled down is made to contribute a grease which is used in the manufacture of butter; a little of it, too, is added to chicory in roasting, in order to give this counterfeit a richness and tone, both to touch and taste, and to contribute that oily sensation which coffee yields and chicory does not."

With this extract we must close our present remarks on this important question.

VIVISECTIONS.

From time to time we have reported the praiseworthy efforts of the "Society for the Prevention of Cruelty to Animals," to remove the blot of vivisection from the pages of medical science. As was to be expected, the French system of teaching its *Veterinary students* found numerous advocates, both in this country and on the Continent, who zealously defended the proceeding on the ground of its

necessity. Far be it from us to deny that physiological science cannot be advanced by well-considered experiments, but it is the repetition of these, merely to gratify a morbid appetite, or to demonstrate to tyros in medicine that which is already received as an axiom, against which we have raised our voice. If these positions be untenable, what must be the one which calls for a continuance of the inhuman practice, on the ground that *students* learn by cutting into living tissues to maintain confidence during the struggles of the poor unfortunate victim, and not to sicken at the sight of flowing blood.

By ceaseless perseverance, however, backed as it has been by public opinion in this country, and also by many eminent physiologists, the Society may now be said to have achieved its mission, or, at any rate, to have removed most of the difficulties in the way of its success. A deputation, consisting of General Sir John Scott Lillie, Mr. Gurney, M.P., Mr. John Curling, and the Rev. T. Jackson, to whom Professor Spooner was added, but was unable to leave London, has a second time visited Paris, and been admitted to an audience with the Emperor, through the kind services of Lord Cowley. "The deputation called the attention of his Majesty to the subject, and explained that it had long occupied the attention of the Paris Society, and also that of similar societies in Europe. The Emperor, without wishing to prejudge the scientific part of the question, assured the deputation that an inquiry should be instituted on the matter."

So far everything looks well, and sincerely do we congratulate the Society, and also our own profession, whose distinguished position as *Veterinary practitioners* has not been built on the pedestal of wanton cruelty, on the surrender of the outworks of this citadel of torture.

THE COLEMAN PRIZE.

The subject selected by the Governors of the College for competition this year among the students was, "The general and comparative anatomy of the skin of domesticated animals, with its physiology; and also the nature, causes,

and treatment of the diseases commonly designated mange, or scab."

The essays sent in reflected the greatest credit on their respective authors, plainly demonstrating the advantages which have resulted from an improved education of late years of veterinary students. The competition was a severe one, and alike praiseworthy and honorable to all who took part in it. The award was as follows:

Silver Medal—Mr. Charles W. Blake, Crewkern, Somersetshire.

Bronze Medal—Mr. C. W. Gregory, Crediton, Devonshire.

Certificate of Merit—Mr. P. Salmon Dollar, London.

Extracts from British and Foreign Journals.

ROYAL AGRICULTURAL SOCIETY.

LECTURE ON THE NATURE AND CAUSES OF THE DISEASE KNOWN AS ROT IN SHEEP.

At a weekly council, on Wednesday, April 17th, Sir John V. B. Johnstone, Bart., M.P., in the chair, Professor Simonds delivered the following lecture on 'The Nature and Causes of the Disease known as the Rot in Sheep:'

Sir John.—The subject to which I have to direct the attention of the meeting this morning is one which possesses a considerable amount of interest, in consequence of the great prevalence of the malady at this particular time, and the fearful ravages which it is producing among sheep. I allude to the disease which is commonly designated by the term rot, so called probably from the circumstance that we find in the progress of the affection that the system of the animal arrives at a condition which is unfavorable to the continuance of the integrity of its organs; its breaks up, if I may so express it, into a decomposing mass, and hence there can be no doubt that this term has been given to the malady, from the ultimate effects which are observed to belong to its existence. The disease is also known by other names in different parts of the country, all of which more or less set forth its pathology. It is known, for example, by the name of "bane" in the western parts of

England, probably from the baneful effects which attend its progress. It is also occasionally called "coathe," a term which seems in part to describe, if not the nature of the affection, certain symptoms which attend its progress. It is somewhat difficult to trace out many of the local terms given to affections; but I have been enabled, I think, satisfactorily to find the origin of this term "coathe." It appears to come from the old Saxon word "cothe," which signifies to swoon or faint; and it is well known that animals affected with rot are exceedingly weak and debilitated, and sometimes so exhausted as to be liable to faint or swoon. I shall not intrude upon the meeting to any extent with regard to these names, but it will be necessary for me to refer for a moment to another term which is used, not in England, but on the continent, to express this affection, namely, "cachexia," or, as it is called in French, "*cachexie aqueuse*," to signify a dropsical condition of the body. And this, again, sets forth somewhat the pathology of the malady, for we find that in its advanced stages there are dropsical effusions which take place into the different structures; hence the origin of this name. With regard to the term cachexia, by itself, it simply signifies in medical language a bad habit of body, and it is not, therefore, by any means an appropriate one to be used for this affection. None of the names I have mentioned, in reality, at all show the nature of the disease; they simply describe certain conditional states of the body and the effects which follow upon these conditional states; and it would be very desirable, if we possibly could, to employ such a term as should express the pathology of the malady. I may also observe that there are a great number of different diseases affecting sheep which pass by the common term "rot;" and this of course will explain why various opinions are entertained with regard to the disease by different persons. These persons, in reality, describe two or more distinct affections, and hence they are not likely to agree as to their nature and symptoms. You occasionally hear such terms as "water-rot" and "fluke-rot," leading one to suppose that with one variety of rot you have a dropsical condition of the body, and that with another you have certain entozoa located in a part of the organism, commonly designated flukes. I would rather, however, confine the term rot, if we are still to use it, to that affection in which we have flukes, as they are called, in the biliary ducts of the liver, setting aside entirely every other disease that has been classed under that name. I shall have to show you, perhaps, in the course of my remarks, that dropsical affections,

although agreeing in their latter stages with some of the symptoms of rot, are essentially and totally different. The next remark that I would make with regard to this disease is that it is by no means new. It is not new to us; nor, in fact, can it be said to be so to early investigators. We find the earliest writers upon the diseases of cattle and sheep making mention of the destruction which arises from time to time from rot, and they speak of a variety of causes as being in operation to produce this state of the animal organism. Not only is it not new to this country, but the same remark will apply to foreign countries, and I think it would not be going too far to say that there is no part of the globe where sheep have been domesticated, in which we do not find this disease more or less prevailing. It belongs to no clime or country. This is a matter of some importance, because, if the assertion be true, we shall see that all the local causes in this country to which the malady is by many persons attributed, cannot possibly have reference to other countries. For example, some persons speak of the deleterious effects of certain grasses, such as the carnation grass. Now, the carnation grass does not, so far as I know, belong to Egypt or to Australia, or to other parts of the world where this disease is met with; and this shows us, were there no other proofs, that we are not right in looking for any one special cause of this affection, in regard, at any rate, to the kind of provender upon which the animals may be feeding. It will perhaps be unnecessary for me to allude to the great losses which all countries from time to time have sustained from outbreaks of this affection. In Egypt the losses are very considerable, and they are always found to attend upon the too early passing of sheep upon those districts that had been overflowed by the Nile; hence some individuals have supposed that there sprang up upon soils of this kind, plants which are injurious to sheep, and produce the affection. But in this country also we have had serious outbreaks of the malady. Perhaps the greatest outbreak that ever occurred in England, or at any rate the one respecting which we have the most authentic information, is that which took place in 1830, in which it was supposed that we lost not fewer than two millions of sheep; and the result was that an inquiry then going on in the House of Commons, with regard to the depressing causes of agriculture, branched out into an investigation of those losses. I believe the Government fully ascertained that in the following year the weekly supply of sheep to our metropolitan markets was diminished by 5,000 —a circumstance that will help to show us to what an extent we have suffered in this country when these great outbreaks

have taken place. From 1830 to the present time we have also had similar visitations, which have been more or less destructive, but none of them perhaps since that period have been so much so as the present one. Speaking generally, I think I am right in saying that nearly all the southern parts of England, together with some of the eastern, and particularly the western counties, are at this time affected with this disease, and there have been some thousands of animals that have had to be disposed of at a very small cost, while others that were not sold in the early stages of the affection have since died by hundreds. I am acquainted with instances in my own neighbourhood, on the verge of London, where the losses have amounted to from 600 to 700 sheep in a flock. I am now speaking more particularly of Welsh sheep, the ewes being purchased and brought into the district for breeding purposes. Some persons, indeed, have scarcely a sheep left. One person in particular who buys 800 or 900 of these sheep, has, I believe, not more than 40 or 50 now alive. In Sussex and in many parts of Surrey similar losses of sheep of far greater value have taken place. In the neighbourhood of Eastbourne some persons have lost as many as 500 or 600 breeding ewes of considerable value as South-down sheep. These facts will show that the disease is not only very extensively spread, but that all kinds of sheep, from the most inferior to the superior, are equally affected with the malady. Having made these preliminary observations, I must pass on to speak of the nature of the disease, and to show what have been supposed to be the causes in operation to produce it. We have had a great number of theories as to the cause of the affection, but they have been more or less wide of the true cause, some, however, have closely approximated to it. For example, in Mr. Youatt's very excellent work —a work which I may say ought to be in the hands of every farmer—there is a very lengthened article upon rot, not only giving his own experience upon the matter, but culling from nearly all those who have written at all sensibly upon the subject. He comes to the conclusion that the disease is due to the inhalation of miasm, and hence that it shows itself more particularly during the summer months, though in its progress the disease is carried over to the autumn, through the winter, and even into the next year. He says that there are many deleterious emanations coming from the earth, when it is surcharged with moisture in damp and swampy districts; that the sheep inhale this miasmatic matter; that it induces a bad habit of body, and lies at the foundation of the malady. It is, however, not a little singular that Mr. Youatt, in stating

facts with reference to the disease, should name one which positively contradicts this theory with regard to miasm, and he appears to have done so without noticing it at the time. The fact to which I allude is this—that on a particular farm there was one field in which there was a swamp, hardly to be called a pond, and that when the sheep were turned into this field during the summer months they became affected with rot. This became so obvious to the farmer that after a time he hedged in the pond, and prevented the sheep from having access to the swampy parts, and then the disease ceased upon the farm. Now, this being a fact of which I have very little doubt, it at once negatives the idea propounded with regard to miasm. If the pond had been thoroughly drained, the water being thereby entirely removed, and the character of the soil improved, I can understand that miasmatic vapours would not have arisen from it; but the pond remaining as a pond or swamp, we can of course see that the miasmatic matter would arise from it just as much when it was inclosed with an ordinary fence as when it was open; and this therefore negatives to a considerable extent, if not entirely, the view which Mr. Youatt has taken of this affection. Then we have had other individuals who have spoken of impure food as the cause. They say that when there is abundance of moisture, together with an elevated temperature, and we have a great growth of grass, especially in damp situations; that such grass is deficient in nutriment to the sheep; that the blood produced from it is impure; and that hence arises a cachectic condition of the body. But this can hardly be said to be the origin of the disease, since it would be perfectly impossible for impure food or water, or anything else, simply as impure material entering into the organism, to call into existence the entozoa upon which the disease depends. Others, again, have looked to certain plants as the cause of the malady; and there is nothing new even in this. I have here a work written by a Mr. Mascall, who was, I believe, the chief farrier to King James. It bears the date of 1587, and is the original edition. It treats of the maladies of cattle, and it has this passage:—"It is good for al men to understand, specially shepheards, which things do hurt or rotte sheepe, whereby, they maie avoide the danger the better, ye shal understand there is a Grasse or weed called Speare Wort, the leaves are long and narrow like a speare, hard and thick, the steales hollow, growing a foote or more high, with a yellow floure, which is comonly in wet places, and there wil it grow most, or where water have stood in the winter. There is also another weed called Peniwort

or Penie-grass; it wil comonly grow in moist and marrish grounds, and it groweth low by the ground, and hath a leafe on both sides of the stalke like unto a penie, thick and round, and without floure, yet some doe saie it beareth a yealow floure, which will (as they say) kil sheepe if they eat it. Alsoe all manner of Grasse that landfloods doe overrun before a raine is not good for sheepe." Coming down to later times, we have had a theory which certainly ought not to be rejected without due consideration. It is founded entirely upon the existence of the fact that in this disease certain entozoa, to which I shall allude more fully, are inhabiting the biliary ducts of the liver; that these entozoa produce a number of eggs, which pass out of the liver into the intestines, and are consequently expelled with the feculent matter of the sheep, in countless myriads it may be said. Some time ago, a Mr. King (I do not know whether he had a medical education or not) wrote a series of papers in the 'Bath Society's Journal,' in which he propounded the theory that the rot in sheep was due to this circumstance: that healthy sheep, if put upon pasture grounds where these eggs exist upon the soil, receive them into their organisms; that the eggs produce the flukes, and that the flukes would consequently thus find their proper *habitat*—that they would seek out instinctively the biliary ducts of the liver, where they would locate themselves and grow to perfection. This theory of the simple introduction of fluke eggs certainly did seem to have common sense for its foundation; but it was found, after a certain length of time, that there was little or no truth even in it; that the ova, for instance, of fluke eggs did not immediately produce flukes. Some ten years ago I put this to the test of positive experiment. I collected a great number of the eggs of the fluke—far more than it would be possible for a sheep to receive into its stomach even in the course of a summer's grazing. I took no less than a teaspoonful of them, and it would be scarcely possible for you to count the number in a single drop of water in which they are placed under the field of the microscope; and these, therefore, to the number of millions, I conveyed into the system of a sheep, which I kept six months, and then had it destroyed. On examining its liver and other organs I found that there were no entozoa in the biliary ducts. In reality, there was not a single fluke produced from those millions of eggs so carried into the system of the animal. This negative result was exceedingly valuable, and I may further remark that it fully confirms similar experiments carried out in Germany. Gerlach, who is connected with the Berlin school, I believe, has had recourse to experiments of the same kind, and

invariably with the same result, thus showing that the ova of the flukes, if introduced into the system of the sheep, will not generate or develop into flukes. We find, then, that all these theories have been more or less at fault, and it is only within, comparatively speaking, a very short space of time, that we have approximated to anything like a correct explanation of the cause of rot. You will remember that I stated I was anxious to confine my remarks entirely to the malady in which we have certain entozoa within the biliary ducts. In this diagram you have a representation of one of these creatures. It is called the *Distoma hepaticum*, and is so designated in consequence of its having apparently two mouths or sucking-discs—one placed at the anterior part of the body, which may be truly regarded as a mouth; and the other on the ventral surface, at a short distance below the neck, just where it terminates in the body. The creature, as I have said, inhabits the biliary ducts of the liver (which you have represented in this diagram); and if we slit up these ducts in any case of the kind, we shall find that they are filled more or less to repletion with Distoma. Before going into the natural history of these creatures, I may now say that after a certain length of time they lead to an anæmiated condition of the entire organism. They not only feed upon the bile which is produced, but they alter the structure of the liver by their presence, just as we find with entozoa in other parts, and when this is the case it is of course perfectly impossible for the liver to secrete healthy bile, any more than pure water can flow from an impure spring. The bile plays an important part in the manufacture of blood, and if it is not in a healthy condition pure blood cannot be produced from the food which the animal takes. The result is that the entire organism is supplied with impure blood, while the system is being drained by the presence of these creatures. After a certain length of time we find that dropsical effusions take place, and then we have the disease established in all its intensity and in all its destructiveness. Having thus shown you that this is truly to be considered as an entozoic disease, it becomes a matter of great importance to see how these entozoa really do inhabit that part of the system of the sheep. When speaking of sheep, however, I may be allowed to remark that, although this affection is most destructive to that animal, it is not exclusively a sheep-disease. These creatures have been found not only in cattle but in pigs, in the ass, and also in the human subject. They are very widely dispersed, but it is in the sheep in particular that they accumulate in such numbers as absolutely to produce this special or

specific malady. We come now to inquire a little into the natural history of the distoma, that we may see what light it will throw on the nature and progress of the disease, and upon the means at our disposal for preventing or curing the affection. It is self-evident that if a disease depends upon a special entozoon, if we are thoroughly acquainted with the natural history of the creature, and if by means of that knowledge we can destroy or get rid of it, we shall thus be able to remove its effects. Now, without unnecessarily occupying time, let me say that the diagram shows dissections of the entozoon, more particularly with regard to its nutritive and generative systems. You see that the sucking disc, to which I before directed your attention, is in reality a true mouth with which the creature takes in the bile with which it is surrounded in the biliary ducts; and that this bile passes down through a system of vessels which are in reality assimilative vessels, and consequently may be regarded as nutritive. You observe there is a peculiarity with regard to the nutritive system. We see an entrance for the material by which the life of the creature is maintained; but we see no excretory organ—we cannot perceive that any feculent matter is thrown out as such from the hinder part or the sides of the entozoon. Strictly speaking, then, this is really an organ by which the creature receives into its system that which it requires for its growth, and by which it also rejects from its system that which is not needed. And here let me say, that although there are many works upon the anatomy of the fluke, containing very nice drawings or engravings—though Professor Owen gives an engraving of the creature in this work on the Invertebrata, and Rymer Jones another in his work on the animal kingdom—in short, though there are twenty or more representations by as many individuals, there is really none that can be depended upon as being perfectly correct. I say it advisedly, because I have been engaged in investigations with regard to the anatomy and natural history of this creature for eight or nine years, taking up the subject from time to time, and working at it occasionally for days together; and it is only very recently that I have been enabled to satisfy myself as to some intricate points of its structure. I have seen these animals, when taken fresh from a slain sheep, and placed in warm water, eject the biliary matter again and again from the oral opening, which thus, as I have said, performs the office of an excretory organ as well as one by which the creature receives its nourishment. The nutritive system has really nothing whatever to do, or rather indirect communication, with the generative system. The great point of interest, however, is the system of generation, which, when we come

to examine it, we find to be exceedingly complicated, the two sexes being blended together in one individual, as we find in many other creatures. It is not, however, to be considered as an hermaphrodite—that term is not strictly applicable to it—but it is a bi-sexile creature, the two sexes being distinct, separate, and perfect. In whatever animal you meet with these entozoa, they are precisely alike in this respect. We have here a representation of the generative system, by which we see that the male organs are contained in the centre of the body, and that the female organs have their origin at the periphery, uniting in two ducts which meet in the middle, where the true uterus or womb is located, and which is here represented as being filled with a great number of eggs. After the eggs are perfected they escape from an opening which is very near to the central sucking disc. With regard to an appendage near this opening, and which is sometimes protruded, and sometimes retracted into the body, it has been supposed to be an intromittent organ or penis, and its existence in all these creatures would rather seem to show that although they are bi-sexile, it is not improbable that copulation takes place between them. We have a similar instance with regard to snails, which are bi-sexile, and it is well known that they are furnished with an intromittent organ as well as a vagina, and that the intromittent organ of the one extends into the vagina of the other; and it is not improbable that this takes place also with the fluke, but this point is not at present fully ascertained. The sucking disc, as it is called, which is seen on the ventral part of the animal, is simply an organ which evidently performs the office of holding the creature on when it is traversing the biliary ducts, forming a kind of focal point. Thus it can travel onwards and insinuate itself into the minute ramifications of the ducts. Nor is it improbable, if copulation does take place between two of them, that the sucking discs approximate to each other for the purpose of contact during that period. If you take any fully developed fluke, it would be perfectly impossible for any one to say what number of ova such a creature contains; but there is one circumstance especially, which renders the ova interesting to us, namely, that if we examine them never so carefully, and any number we please, those that have been naturally expelled from the creatures as well as those that are contained within them, we shall find that there never exists within these ova anything of the outline of the young fluke. This fact being established, it is evident that, in order for the fluke egg to produce ultimately a young fluke, the germs contained within it must pass through a series of transmutations—that either metamorphoses,

as they have been called, or alternations of generations, must take place; and it is by studying these that we can get at something like valuable information with reference to the manner in which these creatures are propagated. It is now several years since I thoroughly convinced myself of this fact; and I believe nearly every person who is at all observing or familiar with the circumstance knows, that if you slit up the gall-ducts of sheep or any other animals long affected with distoma, though you may see some of these creatures smaller than others, you never see what might be in truth called a number of young flukes; nor will you be able to discover any by microscopically examining the bile in which they live. This, then, together with the other circumstance to which I have referred, shows at once there is not a reproduction of these entozoa within the biliary ducts; so that (to put it in a practical way) supposing a sheep to receive six flukes into the biliary ducts, they would never multiply therein. They would deposit millions of eggs in the smallest ramifications of the ducts—instinctively deposited there, it would seem, for the purpose of preventing them from too rapidly flowing out by the functions of those organs—but you would never have more than six flukes. Now, what does this explain? It explains a fact of every-day occurrence. A person will often tell you, "I sent a lot of sheep to the butcher: I never had more perfect animals: they were as fat as sheep could be; yet the butcher found ten or twelve flukes in the liver." The fact is that, in this case, they did not exist in sufficient numbers to lay the foundation for disease. If it were otherwise, we can see that if one fluke only passed into the biliary duct it would multiply almost *ad infinitum,* and that the animal must fall a victim to the affection induced thereby. Here, then, we have a practical result at once, arising with many others from an investigation of the natural history of this entozoon.

(*To be continued.*)

ON ERGOTED GRAIN.

MUCH investigation has taken place of late respecting the nature of ergoted grain. As the subject is one of some interest to our readers, we extract the following notice of it from the *Gardeners' Chronicle:*

Ergot is an affection of the seeds of many species of grass, including those which are cultivated under the common name of corn, by which they are converted into a hard, dark, spur-shaped body, generally much larger and longer than the seed, though sometimes, as in wheat, not differing very materially

in size. Externally it is slightly rough, varying in tint from black or brown to purplish, with frequently a white mealy wash in parts, and at first, if not permanently, tipped with a little irregular scale-like process. When examined under the microscope it exhibits, on a section of this upper portion or the parts adjacent, little spore-like bodies seated on the tips of short, straight threads vertical to the surface of the mass, which are supposed to have the office of impregnation, while within it consists of a white cellular mass rich in oil-globules.

Such is the condition of the plant the season in which it is produced, or till it has remained for some time on the ground, or is lightly covered with soil after the lapse of some months in a common garden-pot. A very curious change then takes place. A little pin-shaped purplish fungus sprouts in greater or less quantity from the sides, the head of which is studded with little receptacles containing linear transparent sacs filled with thread-like sporidia.

The ergot, then, as generally known, is merely a transitional form, or rather the first stage in the existence of the fungus, ending with the production of minute bodies, which are either reproductive or, as is more probable, serve for the impregnation of the perfect fungus.

The grains of a large variety of grasses are subject to become ergoted, and ergoted grains have also been observed in the genus Eleocharis, which belongs to the order Cyperaceæ. Amongst the grasses, besides the cereals, rye, wheat, and barley, may be mentioned couch-grass, darnel, rye-grass, cock's-foot, foxtail, and reed. The ergot of the reed, and blue melic (*Molinia cærulea*) so common in moors, does not produce the same fungus as that of the other grasses just mentioned, and that again which springs from the ergot of the Eleocharis is specifically distinct. The seeds of the common reed are peculiarly subject to ergot, and the heads of flowers when blown off by the wind lie upon the damp soil for some months before the ergot is properly developed. The fungus of this ergot may be raised artificially by placing the head upon damp sand covered with moss, or if they are placed with the stalks constantly immersed in water the ergot will in time produce its fungus. If any of our readers wish to see the ergot of rye, barley, or wheat developed, they have only to cover them slightly with soil about the month of April, keeping it moderately moist with rain water, and they will be pretty sure to have a crop. And they will raise exactly the same fungus from the ergot of rye-grass, except that, in proportion to the size of the ergoted grain, the resulting fungus will vary in size and number.

The reproductive bodies of this fungus are extremely

minute, and, as said above, appear under the form of very slender threads, which may be wafted by the wind and carried to the young spikes of corn and grass. The development of these bodies has not been observed. The first indication, however, of the disease is the presence of a thick, sweet, honey-like, colourless matter upon the spikes, which is filled with granules, resembling somewhat those of yeast; and it is supposed that the grain becomes ergoted in consequence of their presence. This was supposed by Quekett to be the, perfect fungus, and was called by him *Ergotetia abortifaciens* the ergot being supposed to be merely a diseased condition of the grains induced by the fungus. The granules which appear at the upper part of the fungus must be distinguished. They differ in form, and probably have the function of impregnation, though this scarcely admits of proof.

PLEURO-PNEUMONIA IN CATTLE IN AUSTRALIA.

The following report on the lungs of diseased cattle recently destroyed at Campbellfield has been printed by order of the Legislative Assembly:

Government Analytical Laboratory,
Melbourne; *Jan.* 29, 1861.

In accordance with a communication, of date the 23d instant, received fromthe Hon. the Chief Secretary, instructing us to examine certain diseased lungs of cattle recently destroyed for pleuro-pneumonia at Campbellfield, we have the honour to report as follows:

The specimens submitted to us were five in number, and presented respectively the following general characters:

1. Lungs of a calf.—The upper half of the right lung was affected. Many of the bronchial tubes were filled with casts. Portions of this lung sunk in water. The pleura apparently unaffected.

2. Lungs of a full-grown animal.—In one lung there was a large cavity, the contents of which had escaped during transmission. Other parts of the lung were quite solidified.

3. Lungs of a full-grown animal.—Large portions of one lung, amounting to one half of the whole, solidified. The solidification extended from the anterior to the posterior surface.

4. Lungs of a full-grown animal.—Pleural surface of one lung thickened to the extent of one inch. Substance of the lung completely disorganized at different parts.

5. Lungs of a full-grown animal.—Presented the same

characters as No. 4, with the exception of the thickening of the pleura.

Before describing the more minute pathological appearances of the lungs, we deem it necessary to refer to the circumstance that in no case had there been a natural termination, the animals having been slaughtered. The ultimate features of the disease were, therefore, not before us. In more then one case, however, a fatal termination could not have been far distant. The various conditions of the different lungs examined appeared to admit of a division of the disease into three stages.

In the first stage the lung was increased in weight and density. It was of a dull red or crimson hue, sometimes mottled with different shades. It contained air in variable amount—from slightly less than the normal quantity to almost none at all. In an advanced degree of this stage, the section was smooth and nearly solid. The microscopical appearances were chiefly those of congestion.

In the second stage, the affected portion of lung was perfectly solidified and of a yellowish red colour. The natural cohesion was much diminished. The torn surface presented a granular aspect, and the smaller bronchial tubes, as well as the air-cells, were blocked up with solidified exudation. On microscopical examination the air-cells and interstitial tissue were found infiltrated with inflammatory corpuscles and numerous fatty granules and molecular matter. The elastic tissue, however, remained almost or quite free from change.

In the third stage, one of two conditions was found. The diseased parts had either sloughed *en masse*, or they were thoroughly broken down by purulent infiltration or molecular necrosis. In the first of these cases nothing was seen but a greenish-black pulpy substance. In the latter, the bronchial tubes and some of their smaller ramifications still mapped out what had been the lung structure.

The bronchial tubes in the latter stages of the disease were sometimes found to be completely filled with solidified exudation. In some instances tubes of the diameter of more than half an inch were thus blocked up.

The pleura was not always involved in the disease. In some instances the deeper portions only of the lung suffered, the pleura being almost, if not quite, healthy. Apparently the first effect on that membrane was a change of colour generally approaching to a violet. Where the disease was advanced, the membrane was roughened, or was covered with a layer of exudation (false membrane), in one case as much as an inch in thickness.

These pathological appearances enable us to identify the

disease as that which has prevailed in Great Britain and on the Continent of Europe, and which is known as pulmonary murrain or pleuro-pneumonia.

With regard to the curable or incurable character of the affection, we do not hesitate to express a strong opinion that only in the first stage, if at all, is it likely to admit of successful treatment, or of natural or spontaneous cure, as the appearances observed leave no doubt that the morbid process is one of rapidly disorganizing inflammation.

The examination which we have had the opportunity of making does not warrant our expressing any opinion on the question as to whether the disease is infectious or contagious, nor can we offer any suggestion as to its origin. These are subjects which have been more or less discussed in reports presented to the Imperial Parliament, some of which we have had before us; but we are of opinion that further observation is necessary for their satisfactory elucidation, as also for acquiring a knowledge of any modifications of the disease dependent on the climate of this country. Certainly, the great preponderance of evidence taken in the mother-country is in favour of the belief that the disease is contagious or infectious.

In conclusion, we have seen nothing to lead us to believe that the affection is originated by any kind of parasitic organism.

(Signed) JOHN MACADAM, M.D., Surgeon, Chairman.
THOMAS SHEARMAN RALPH, M.R.C.S.E., &c.
JAMES T. RUDALL, F.R.C.S.L.

THE ROYAL DUBLIN SOCIETY AND THE VETERINARY COLLEGE.

FROM the first mention of the proposal to found a Veterinary College for Ireland, there was no doubt entertained by any one of the necessity for the education which that institution was intended to confer. There was, it is true, a question raised as to who should provide the means of imparting this education, and some contrariety of opinion, seemingly, as to what constituted the requisite means. There were some who thought that a course or two of lectures, annually, would supply the want, and that these lectures, with some accessaries, could well enough be provided by the Royal Dublin Society. The subject was thus brought before this venerable body; and, ever solicitous with regard to anything aiming at

promoting the interests of Ireland, the matter was taken into serious consideration. If the Society had a duty to perform, it was not disposed to shrink from it; and it became the business of those who attend to such matters for the Society to know exactly what its duty was, and what means they possessed for performing that duty. A committee was appointed to report to the council on the subject, and so determined were the council and the Society to act according to the best information in the matter, that no fewer than three reports have been called for, and, in the light thus elicited, the Royal Dublin Society has at last come to a decision. What that decision is, the following, which we take from a report adopted at the meeting of the Society, held on the 4th inst., will show:

"In thus communicating to the Society the result of their inquiry, the council feel called upon at the same time to observe that the question of establishing a Veterinary College for Ireland has not been confined to the walls of the Royal Dublin Society; since the reference to the council in November last, the prospectus has been advertised of a Joint-Stock Company, formed for a like purpose, upon commercial principles, under the provisions of the Limited Liabilities Act. Of that enterprise it may be said, that while it indicates a strong public desire for a national institution for the study of the veterinary art, the respectability of the names of the noblemen and gentlemen who compose the council for its government affords a guarantee that the undertaking has not been lightly entered into, nor without a reasonable prospect of success.

"The Society, being desirous that Ireland should not longer be unprovided with an institution so much required, would probably view with interest the efforts of an independent company to establish one; and, so far from attempting the establishment of a rival or competing college, would rather give countenance and encouragement to a national enterprise of so much importance. Taking this view of the matter, the council do not recommend that any immediate steps should be taken upon the reports now presented, but that, reading them in the Proceedings of the Society, any further action should be deferred until next session, whereby ample time will be given for the full development of the plans and resources of the company referred to."

These views and this conduct of the Royal Dublin Society are in the most perfect accordance with what we have repeatedly said on this subject; and, although some time has been allowed by the directors of the college to elapse, out of respect for the Royal Dublin Society, we feel perfectly

assured they will now see that the time has not been by any means lost. They rested on their oars, not because they had any idea of abandoning the project to which they had put their hands, but simply that they did not wish even to seem to be in antagonism to so respectable a body as the Royal Dublin Society, and quite confident that they were but husbanding their energies against the time when the field of operations would be left perfectly clear for themselves. The field is now clear, and we believe we have good grounds for stating that it will be taken possession of in a manner which will leave even the impatient no cause to regret the delay. Not only have the directors been quietly preparing for the time which has now arrived, but they proceed to their work with all the countenance and encouragement which the Royal Dublin Society has so gracefully bestowed upon their efforts and exertions.

No one who has at heart the interest of the country in this matter, even if he took no special interest in the college which has been projected, can look upon the conduct of the Royal Dublin Society on this occasion without increased sentiments of respect, nor without feelings of pride that the affairs of the country should be so sedulously looked after by a body of men governed by such praiseworthy principles. The sober, conscientious manner in which the matter was taken up at the beginning, and the graceful and courteous manner in which it is now, after mature consideration, dropped—or rather handed over to the company—are both in the most perfect keeping with our highest idea of what the character and conduct of such a body should be; and we have no doubt the council of the Veterinary College will meet the conduct and the views of the Royal Dublin Society in that spirit which the graceful conduct of the latter is so well calculated to inspire.

FACTS AND FALLACIES CONNECTED WITH THE RESEARCH FOR ARSENIC AND ANTIMONY; WITH SUGGESTIONS FOR A METHOD OF SEPARATING THESE POISONS FROM ORGANIC MATTER.

By Alfred S. Taylor, M.D., F.R.S.

(*Continued from p.* 237.)

It was asserted, on the part of the defence in Smethurst's case, that *electrotype* copper was always pure, and that this

could easily be procured. In order to test the accuracy of this statement, I have, since the trial, made an examination of seven samples of electrotype copper, three of which were prepared by myself, one was prepared by a respectable London firm, and another sample was procured from Elkington's electro-plating factory at Birmingham. Two others were given to me by friends. In five of these no arsenic was detected; in the sixth a small quantity was found; and in that which in richness of colour and flexibility surpassed all the other samples, namely, Elkington's copper, known under the name of "copper-edgings," arsenic was detected in well-marked proportion. The purity of electrotype copper cannot, therefore, be taken for granted; every sample should be tested before it can be pronounced to be free from arsenic. The purity or impurity of the deposited copper no doubt depends on the purity of the sulphate employed, and the rapidity of deposit.[1] Mr. Dugald Campbell has furnished me with the results of his experience in the subjoinedl etter.

"*Arsenic in Copper.*

"In compliance with your request, I now write to you the results of my examination of twenty samples of copper, which

[1] The above-mentioned facts show how extensively arsenic is diffused. Our copper coinage contains a large proportion. I have detected arsenic in the copper coinage of all our sovereigns, from the present time to the reign of George II. I found it, but in smaller proportion, in a coin of the reign of Augustus Cæsar; and in a portion of brass from a sepulchral inscription of the reign of Henry V (1416). All our copper culinary utensils contain it; and when these are corroded or destroyed by acids, salts, or fat, arsenic is set free. The arsenic is deposited with the insoluble copper salt, and may be detected in it. Thus, in the insoluble oxychloride of copper, deposited as a result of the action of common salt on copper under exposure to air, I have found arsenic, but not in the liquid. Salt fish, cooked and allowed to cool in a copper vessel, may thus become impregnated with arsenic. Brass contains a large proportion of arsenic, derived from the zinc as well as the copper. As brass nails and plates are frequently and profusely used for coffins, insoluble cupreous salts containing arsenic may be formed during the decay of the body, and become intermixed with the remains. This is a point which requires looking to when chemists rely upon thousandths of grains, and they are engaged in analysing the remains of the dead after some years' interment. In an exhumation of a body after nearly two years' burial, at which I was present, I noticed on the front of the dress covering the body a large brass button, which had become incrusted with a blue deposit of hydrated oxide and carbonate of copper, heightened in colour by the ammonia of decomposition. I have no doubt that had this been tested it would have yielded arsenic. Nickel silver, containing half its weight of copper and about one third of its weight of zinc, also contains arsenic. The native subchloride of copper, obtained from the Atacama desert in Peru, did not yield any trace of arsenic.

were all sold as *pure*, and, in many instances, were specially stated to be free from arsenic.

"Of these samples, eight were said to be *electrotype* copper; and, from their appearance, I should say they were. Four out of the eight were said to have come from Germany.

"Some of these samples I had from friends, and the remainder were purchased in London from different sources of high respectability.

"In every one of these samples I found the presence of arsenic, higher in some than in others, but unmistakeable in all. I do not say that the arsenic was in such quantities as in ordinary circumstances to mislead an experienced person in detecting arsenic in a substance by Reinsch's test; still in fluids containing oxidizing acids, and when it was requisite to detect minute quantities of arsenic, I think the quantity of arsenic in even the purest of these eight coppers would interfere with the test.

"Of the remaining twelve samples, some were purchased in London from undoubted sources of respectability, others were obtained through friends at Bristol, Liverpool, Edinburgh, and Glasgow. Two out of the twelve were copper-gauze; the remaining ten were foil of different thicknesses.

"In all these samples of copper, arsenic was present in distinct quantity, and, as in the electrotype samples, there was a variability as to quantity: but the sample most free from arsenic; contained much more than the most contaminated of the electrotype samples. I am of opinion that some of the samples were so impure from the presence of arsenic, as even to mislead an experienced person, when testing for this substance under ordinary circumstances.

"I remain, &c.,

"August 13th, 1860. "DUGALD CAMPBELL.

"Dr. A. S. Taylor."

If these facts be admitted, the inquiry naturally follows—Is there any risk in employing copper containing arsenic, for separating this substance in cases of poisoning? The answer may be anticipated. There is no risk, unless the copper, during the process, is brought to a state of solution; and of this fact the operator is immediately informed by the disappearance of the metal and by the liquid acquiring a deep-green colour. Hence, while the negative results which the process so frequently furnishes afford an unquestionable proof that the copper may be used with safety, the operator has clear evidence when there is risk, by the solution of the copper in the acid liquid. If the copper employed is unal-

tered in weight, and is not to any perceptible extent dissolved, it is obvious that the liquid submitted to analysis cannot have received any impregnation of arsenic from the copper employed; and if, under these circumstances, arsenic is deposited on the copper, then that poison must have been present in the liquid submitted to examination. Cold hydrochloric acid, if strong and not too freely exposed to air, produces no deposit or change in the appearance of bright copper, even after forty-eight hours' immersion and exposure. Whether the copper be pure or arsenicated, there is no perceptible difference. The upper stratum of the liquid has a slight-greenish yellow tint, arising from the oxidation and solution of a small quantity of copper. If the polished copper is immersed in an acid diluted with eight parts of water, it will be found after forty-eight hours that the whole of the liquid has a greenish colour, from the formation of chloride; the copper, if arsenicated, is coated with a thick dark-coloured deposit; while, if pure, it is of a reddish-brown colour. The surface of the metal in either case will be found much corroded, and a number of tetrahedral crystals of subchloride of copper are scattered over it. I have not been able to procure crystals of arsenious acid by heating impure copper thus coated, and I have not detected any arsenic in the acid liquid; the amount of arsenicated copper dissolved is probably too small to furnish any evidence of arsenic. These results confirm Reinsch's statement that the concentrated acid, *cæteris paribus*, exerts a less powerful action on copper than the diluted acid; they also prove that arsenicated copper should not be allowed to remain for a long time in the acid liquid. The tarnish thus formed might, unless properly tested, be mistaken for arsenic, or conceal an arsenical deposit. They prove, however, that the alloy of arsenic and copper (arsenide) is not so decomposed by cold diluted hydrochloric acid as to set free any arsenious acid in the liquid. In short, the danger of any fallacy in the ordinary use of the process arises from the presence of arsenic as an impurity in the acid, and not from arsenic contained as impurity in the copper. But for this fact, no chemist would ever have met with negative results in employing copper in the state in which it has hitherto been used.[1]

[1] In the case of Smethurst, out of seventy-six analyses in which the process of Reinsch was resorted to, arsenic was detected in only two instances. In one of these, the copper was entirely dissolved by reason of the unexpected presence of chlorate of potash, and there was no doubt that, from subsequent investigation, the arsenic here detected proceeded from the

Hydrochloric acid, diluted with from six to ten parts of water, has but a feeble action on copper, even after long boiling. A trace of this metal may, under these circumstances, be found in the liquid. If, however, the oxide of arsenic or antimony should be present in the liquid, a portion of copper is immediately dissolved, and an equivalent portion of arsenic or antimony is deposited. So soon as the copper is completely coated, the solvent action is arrested. In order to determine how far arsenicated copper is liable to undergo solution, and to set free arsenic as a result of boiling in pure hydrochloric acid diluted, the following experiment was performed. A quantity of copper-foil and gauze, equivalent to 39·4 grains in weight, was boiled in a retort with a mixture of one ounce of pure hydrochloric acid and eight ounces of water. The boiling was continued for half an hour, and the distilled acid liquid was collected in a cool receiver. This amounted to twelve fluid drachms. It contained no trace of copper; and on a careful examination of the liquid by Marsh's and Reinsch's processes, there was not the slightest trace of arsenic in it. The large quantity of acid liquid left in the retort was found to contain a small quantity of copper; but there was no arsenic dissolved in it. The undissolved copper, when washed and examined by the microscope, had no metallic deposit upon it; it was unchanged in colour, but presented slight marks of corrosion. A quantity of it heated in a tube gave no sublimate.

When arsenicated copper is boiled in the diluted acid for five minutes—a period within which arsenic, if present, is commonly manifested by some deposit or change of colour on the surface of the metal—no copper is dissolved. The metal retains its usual polish and lustre. If a small portion of oxide of arsenic or antimony be now added to the boiling acid liquid, there is an immediate deposit on the clean copper surface; and copper, in small quantity, will be found dissolved in the liquid by that delicate test, ferrocyanide of potassium. It is, therefore, obvious that the metallic oxide (*i. e.* the poison itself) brings about the solution of the copper, but not to an extent to eliminate arsenic so as to affect the process. It has been alleged that the accidental presence of certain salts, or organic liquids not containing arsenic, would lead to a sufficient solution of the copper to give rise to a deposit of arsenic on that metal. This action has been loosely ascribed to alkaline nitrates, phosphates, sulphates, and chlorides,—salts which

dissolved copper. In the other instance the copper was *not* dissolved, but was coated in a few minutes, as is usual in cases in which arsenic is actually present as a poison.

may be occasionally met with in organic liquids. A grain of each of these salts was dissolved in two drachms of diluted hydrochloric acid, in the proportions used for the precipitation of arsenic (1 : 8). The solution was brought to the boiling point, and boiled for a few minutes in contact with a slip of polished copper. No copper was dissolved in any one instance, and the metal retained its lustre. On adding a minute portion of arsenic to the liquid, the metallic copper was speedily coated, and traces of a salt of copper were now, for the first time, found in the liquid. When to a similar quantity of acid liquid, in which copper was immersed, a fragment of chlorate of potash was added, there was an immediate solution of a portion of the metal; a fact rendered evident by the production of a green colour, and by the application of the usual tests for copper to the liquid.

While the presence of a sulphate, nitrate, chloride, or phosphate does not affect the process, so long as a properly diluted acid is employed for a proper time, it was found that an alkaline chlorate, even in small quantity, caused a rapid solution of the copper, and in propertion to the amount of this solvent action, a liberation of arsenic from the arsenicated copper. Owing to this chemical action of a chlorate on copper, it has been contended that Reinsch's process ought never to be employed when such a salt is present. Mr. Herapath affirms that "Reinsch's process is not applicable where nitrates or chlorates are present."[1] With respect to the nitrates, it admits of distinct proof that they present no objection when a properly diluted acid is used; and with regard to the chlorate, the process is objectionable, provided pure copper be used. The operator, in using copper free from arsenic, has only to saturate the liquid with the metal, and the last portion of copper put into it will effectually remove the whole of the arsenic, as well as any antimony that may be present. It is a good method of detecting minute traces of arsenic or antimony in copper; and one free from all objection, provided the hydrochloric and the chlorate are pure. The only circumstance which would render Reinsch's process inapplicable to the separation of arsenic in the presence of a chlorate is the use of copper containing arsenic, like the No. 13 wire or the dial-plate or foil, as it is commonly sold. It is only the analyst, who has habitually and knowingly used arsenicated copper, who can treat the presence of a chlorate in an organic liquid as a serious obstacle to the employment of this process.[2]

[1] Letter in the 'Lancet,' September 3, 1859, p. 248.

[2] In the Smethurst case, arsenic was deposited on a piece of copper

While, however, there is no reason to believe that the use of ordinary copper is attended with any risk in the employment of Reinsch's process, merely because it contains traces of arsenic in intimate chemical union, it may be a question whether, out of deference to public opinion, a substance containing arsenic in any form, or in any proportion, should be used for the detection and separation of this poison. In

gauze, from one out of three evacuations passed by the deceased a few days before her death. The gauze employed was undissolved after boiling; and unchanged in form and substance. There was no indication that any portion of it had been dissolved; and assuming that it could coat itself with arsenic in the acid liquid, without undergoing solution (an impossibility if free arsenic was not present), it is quite certain, from its small size, that it would not contain enough arsenic to give such a deposit as was ultimately procured upon it. A portion of this deposit yielded a well-marked sublimate of octahedral crystals. Some ingenious chemists suggested that a phosphate, nitrate, or chlorate might have been present on this evacuation, have dissolved the arsenic out of the copper (without dissolving or destroying the copper itself), and thus have given rise to a fallacy. The fallacy was in their own imaginations, and based on a preconceived desire to account for a result by any theory, excepting the true one; namely, that arsenic in small quantity was present in the liquid. Two other evacuations examined by the same materials yielded no arsenic (they had been passed before the symptoms resembling arsenical poisoning had supervened), yet there was no reason to suppose that these should have been deficient in the salts assumed to be present in the one in which arsenic was detected. The latter evacuation contained blood and mucus, such as usually accompany arsenical poisoning. There was no blood and but little mucus in the two evacuations from which the copper-gauze came out without any arsenical deposit upon it.

I must here notice another theoretical objection to the use of Reinsch's process when a chlorate is present, namely, that arsenic may be lost by its volatilization as chloride. This presents no difficulty: the operator, if he believes in the reality of the objection, has only to carry on the boiling in a retort, and to collect the distilled product in a receiver. The chloride of arsenic, however, is not likely to be carried over. But is this a fact, or is it a speculation? In the correspondence published in the medical journals, it was set down as a fact. On distilling a mixture consisting of seven grains of chlorate of potash, with one drachm of pure hydrochloric acid and eight drachms of water (the usual proportions for separating arsenic), and adding to this twenty-five grains of arsenicated copper-gauze cut into fine pieces, the acid liquid collected in the receiver after the operation had continued for more than an hour contained not a trace of arsenic. Pure zinc was placed in it, and the gas produced was passed into a solution of nitrate of silver. There was no change, even after the zinc had been exhausted. The arsenic is, in fact, converted to arsenic acid and retained in the retort as arseniate of potash, in the midst of the diluted acid and of the chloride of copper formed at the expense of the gauze. Even if chloride of arsenic were produced, it would be deposited on the undissolved copper.

If, therefore, Reinsch's process has hitherto been avoided under these circumstances, because it might lead to the loss of arsenic, this is an error; if because it might introduce arsenic into the liquid under examination, then this implies that the operator must have been in the habit of knowingly using an arsenicated compound of copper for the separation of arsenic.

several medico-legal cases which have occurred since the universal existence of this impurity has been made known, the ordinary copper, in gauze and foil, has been employed by gentlemen who, at the time, believed they were using pure copper; they have relied for purity only on the negative mode of testing the metal suggested by Reinsch. A chemist who does this must always incur some risk, and the result may be, that a jury will be induced to reject his evidence, simply because he has employed an article actually containing the poison for which he was seeking. Whatever explanation he may give as to the non-solution of the copper, and the proportion of arsenic found being much greater than any arsenic contained in the copper which he used could possibly account for, it may always be suggested that he actually put the arsenic into the liquid. This equally applies to the use of the impure metal for the detection of antimony, as antimony is not an uncommon impurity in copper. To meet this objection, it will therefore be absolutely necessary, in future, to seek for copper free from either arsenic or antimony.

(*To be continued.*)

EFFECTS OF ARSENIC.

Schmidt and Stürzwag have made experiments on birds and animals, from which they draw the conclusion that arsenious acid introduced into the organism occasions a considerable diminution in the secretion of matter, which explains a fact, they say, well known to horse-dealers—that horses fatten after the administration of small doses of arsenious acid. That quantity of fat and of albumen, which corresponds to the depression in the secretion of carbonic acid and urea, remains in the body; and if the animal receive adequate nourishment, its weight increases.

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Annales de Médecine Vétérinaire, Bruxelles, Feb. 1861.

LAMINITIS CONSEQUENT ON PARTURITION.

This case, reported by M. Guilmot, occurred in a four-year-old mare with her first foal. The leading symptoms were increased respiration, hot skin, flanks tucked up, the feet hot, and bearing the weight on the heels; but the principal symptom was the total cessation of the secretion of the milk, the mammary gland being full on the previous evening. This was important, inasmuch as, unless the milk could be brought back into the gland, there would be little chance of combating the metastatic congestion of the feet. At the end of four days, by rational treatment, the mare was a little better; the fever had abated, the feet were less hot, and the weight was borne more equally on them. This coincided with a return, though in a slight degree, of the milk to the udder. There now seemed to be a chance of a favorable result, of which the proprietor was duly informed. But it proved deceptive, and shows how necessary it is to be guarded in our prognosis. M. Guilmot had hardly arrived at home, when a messenger followed to inform him that the mare was very bad, and before he got to her she was dead. She had been suddenly seized with heaviness in the head, and an irresistible tendency to push against the wall, beating of the flanks, &c. An attempt was made to bleed her, when she fell, and died instantaneously. On the *post-mortem* examination being made, all the organs were found healthy, with the exception of the brain; the meninges were strongly injected, the veins were gorged with blood. Those of the surface of the brain were ruptured in several places by the intensity of the congestion, and the ventricles were filled with blood. These lesions were sufficient to explain the suddenness of the catastrophe. The malady seemed to have changed by metastasis from one part to another.

HYPODERMA EQUI, LARVA OF AN INSECT DIPTERA.

A SPECIES of Œstrus at times causes great inconvenience in the horse. In one case, a well-bred horse, having always been thoroughly clothed up, had a tumour on the withers, just in front of the roller. It was much inflamed, hot, and painful. After several days of treatment, a black speck was perceived in the centre, with a small opening filled with pus, through which was seen the posterior extremity of a larva, similar to that infesting the ox, only much smaller. When the larva had been extracted, the tumour healed without any further care. According to M. Joly, professor of zoology, this larva forms a particular species, to which he has given the name of *Hypoderma equi*. They are rare in the south, but more common in the north of Belgium, also in Holland, and on the shores of the Baltic and the North Sea.

TRANSMISSION OF TETANUS FROM ANIMALS TO MAN.

By M. BETOLI (' Annali Universali di Medicina').

AN Italian physician, practising in the Brazils, relates the following fact :—A rich proprietor ordered a bull to be castrated. The operation was, perhaps, badly performed, and tetanus supervened, and the animal died in convulsions. The proprietor ordered it to be buried, but the slaves secretly ate some of the meat. Immediately after, two of them were seized with tetanus so horrible that in a short space of time they died. Two days after another was attacked; he was immediately sent to the nearest town. When he arrived he was so bad that he could not tell his name, and he died forty-eight hours after the attack, notwithstanding the efforts of Dr. Heredia to save him. On the same day another companion of the above, also attacked with tetanus, entered the hospital; but this one probably had not eaten so much of the diseased meat, or perhaps was of a stronger constitution, for he was less violently attacked, and there was some chance of saving him. Here are then two cases of almost sudden death from having eaten the flesh of an ox affected with tetanus, although no medical practitioner has considered it up to the present time a transmissible malady. There is nothing (observes M. Betoli) so deceptive as a single fact. The disease of these slaves was certainly tetanus, as M. Heredia has

certified; but there is no instance on record of the malady having been transmitted, and in the tropics it is of frequent occurrence under certain conditions of the atmosphere. It is therefore unnecessary to have recourse to contagion to account for its development amongst individuals submitted to the same hygienic influences, and the same sort of living. Notwithstanding this, long experience proves the transmission of tetanus from the ox to man. The herdsmen of the province of Rio Grande, of the Argentine Confederation, and the plains of Araguay, have been acquainted with the fact long since. When an ox dies from spasm (the name given by them for tetanus), they will no more touch it than if it had died from glanders or carbon, because they know by experience the danger of doing so. It appears that this malady is like rabies in the dog—transmissible from the animal to man, though not from man to man.

Journal des Vétérinaires du Midi, Jan., 1861.

MEMOIR ON CALCULI IN THE URINARY PASSAGES OF THE OX.

By M. P. Causs, Vétérinaire at Castlenaudary.

Fromage de Feugré has described the symptoms by which the presence of calculi may be detected when located in the urethra, and he also gives the names of several practitioners who have proceeded to extract them with success, but without clearly describing the manner of the operation. The author knows of no symptoms or signs which indicate the presence of calculi when confined to the bladder,—when as yet none of them have passed into the urethra. It may, however, be suspected when the ox has suffered from time to time from slight colic, without any marked derangement of digestion. There are also frequent erections of the penis. In these cases of doubt the hand should be introduced into the rectum, and by compressing the bladder, the presence of calculi is ascertained; but the author states that he has often done this without success, even when he was almost certain of their presence. It is only when the staling is suddenly interrupted, and the animal appears uneasy, turns his head towards his flanks, shifts his hind legs frequently, &c., and when before the voiding of the urine there is an elevation of the penis at the ischial arch, then we may be sure that one or more calculi have passed through the neck of the bladder

into the urethra, or have descended into the ischial arch, or, being very small, have passed off with the urine. Thus some months may elapse without the proprietor being aware of the existence of the disease; but the calculi increase in size meanwhile, and can no longer be expelled during micturition, but become fixed in the urethral canal. The bladder becomes more and more distended by the increase of the urine; the animal is in great pain; is constantly trying to urinate; at every effort an undulation may be perceived in the urethra at the ischial curve. If now the hand is introduced into the rectum, the bladder will be found distended; and, if pressed, a few drops of urine may escape from the penis. Thus five or six hours may elapse, during which the ox is in the greatest agony, when suddenly the pains cease, and, the patient becomes easy. This calm is owing to the rupture of the bladder; the urine, escaping into the abdominal cavity, causes peritonitis, which speedily terminates in death.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD APRIL 3, 1861.

AT the quarterly meeting of the Council, held April 3, 1861,

PRESENT:—The President, Messrs. Braby, Broderick, Ellis, Ernes, Gamgee, Harpley, Hunt, Lawson, Secker, Silvester, Withers, Professors Spooner and Simonds, and the Secretary,

J. WILKINSON, Esq., the President, in the chair,

The minutes of the preceding meeting were read and signed.

Mr. Tegg, of Stamford Hill, proposed by *Professor Simonds*, and seconded by *Mr. Silvester*, and Mr. Moss, of East Street, proposed by *Mr. Ernes*, seconded by *Mr. Gamgee*, were unanimously elected as auditors. Mr. Harply, Mr. Withers, and the Secretary, were appointed the committee to prepare the annual report.

The registrar's report was read; it reported six deaths during the quarter:—G. J. Vincent, of Luton, diploma dated December 1853; J. Edgar, of Dartford, May 1827; W.

Ridgeman, Liskeard, January 1842; J. Boston, Walworth, March 1828; and R. H. Pritchard, Wolverhampton, May 1856.

The quarterly balance-sheet was read: it showed a balance in hand, after defraying the expenses of the quarter, of £409 3*s.* 8*d.*; and on the motion of *Mr. Harpley*, seconded by *Mr. Gamgee*, it was received and adopted.

The motion of *Professor Spooner*, seconded by *Mr. Withers*, "That in future, the fees of the Board of Examiners be increased from two guineas to three, for each attendance," was carried unanimously.

A preliminary notice of the great desirability that an examination of pupils previously to their entering as veterinary students, was laid upon the table by the President.

E. N. Gabriel,
Secretary.

SPECIAL MEETING OF COUNCIL, April 17, 1861.

Present:—The President, Messrs. Braby, Ernes, Jex, Hunt, Harpley, Moore, Withers, Professor Spooner, and the Secretary.

The President, J. Wilkinson, Esq., in the chair.

The change for the increase of the fees of the Board of Examiners from two guineas to three was confirmed.

The annual report having been read, it was, after a few verbal alterations had been made in it, received and adopted, as was also the annual balance-sheet.

On the question being raised as to the desirability of any of the officers of the college being present at the first meeting of the re-organization of the Scotch Board of Examiners, it was decided that such was not desirable.

E. N. Gabriel,
Secretary.

PRESENTATION OF A TESTIMONIAL TO DR. A. DALZELL, OF THE EDINBURGH VETERINARY COLLEGE.

The students attending the Edinburgh Veterinary College, with numerous visitors, met in the lecture-room of the college, on the evening of April 11th, for the purpose of

presenting Dr. A. Dalzell, the Professor of Chemistry and Materia Medica, with a handsome gold watch and chain.

Professor Dick occupied the chair.

Mr. Daniel Mac Lean, one of the students, in a neat and appropriate address, referred to the advantages which veterinary science derived from the application of chemistry, and also to the many kindnesses which he and his fellow-students had received from Dr. Dalzell during the past session. He concluded by saying—

Dr. Dalzell, allow me, in the name of my fellow-students, to crave your acceptance of this watch and chain, not on account of its intrinsic value, but as a mark of our sincere regard, and of our appreciation of the great services you have rendered us in our studies.

Dr. Dalzell replied in a feeling manner, and in the course of his remarks said, that his own experience had proved the words of his predecessor (the late Dr. George Wilson, a man who was honoured and respected by every one who knew him) to be really true, viz., that he had had more pleasure in teaching the students of the Veterinary College, on account of their great attention and willingness to be taught, than those of any other institution with which he had been connected.

Dr. Renton, in moving a vote of thanks to the chairman, alluded to the untiring efforts with which Professor Dick had carried on the college of which he was the founder, and hoped that he would be long spared to occupy the position which he so ably fills.

The motion was enthusiastically carried, and duly acknowledged by Professor Dick.

The watch bears the following inscription:

PRESENTED BY THE STUDENTS OF THE EDINBURGH VETERINARY COLLEGE
TO
ALLEN DALZELL, M.D., V.S., F.R.S.E., &c.,
LECTURER ON CHEMISTRY AND MATERIA MEDICA,
AS A MARK OF THEIR RESPECT FOR HIM AS THEIR TEACHER AND THEIR FRIEND.
Session 1860-61.

Veterinary Jurisprudence.

HEDON COUNTY COURT, February, 1861.

HOR *v.* MATTHEWS.

The plaintiff was a carrier residing at Hedon, and the defendant was an innkeeper, also living at the same place. The action was brought to recover £7, the value of a pony which the plaintiff alleged died in consequence of the improper treatment of the defendant.

Mr. Park appeared on behalf of the plaintiff, and *Mr. Watson* for the defendant.

It appeared from the evidence of the plaintiff that on the morning of the 16th of October last the defendant, without his knowledge or leave, took his pony and drove it in a light cart to Hull and back, a distance of ten miles; that on the defendant's return in the evening, his groom took the pony out of the cart and rode it into a pond for the purpose of washing its legs (when it probably drank a quantity of cold water, but this was not clearly proved by the evidence), and afterwards gave it a feed of barley, a species of food to which the pony was not accustomed. The pony soon afterwards began to exhibit symptoms of great pain, by rolling about in the stable, as if suffering from the gripes. It appeared that the defendant did not send for any veterinary surgeon, but administered some gin to it, and subsequently some oil. He also bled the pony twice. The pony, however, died on the following day. It was shown that on the animal being opened the intestines were inflated with gas, and contained much water and a quantity of whole barley.

Mr. Henry Taylor, of Hull, veterinary surgeon, was called for the plaintiff, who stated that in his opinion the treatment of the pony by the defendant's groom was improper, both by taking it into the horsepond and by giving it barley. He also gave it as his opinion that the death of the pony was caused by its immersion in cold water (when it would in all probability drink), followed by a feed of barley, not being accustomed to such food.

His Honour asked Mr. Taylor's opinion as to bleeding the pony?

His answer was, that it would cause the animal to die sooner. As to barley it was his opinion that it was one of the best friends veterinary surgeons had, if improperly administered. He had known many animals die from this cause, and on a post mortem-examination had found the stomach or intestines ruptured, not many hours after the barley was given.

Mr. Watson, for the defendant, stated that the plaintiff had lent the defendant the pony, and that the treatment which it had received from him and his groom was kind and proper. He would call the defendant to substantiate that view of the case, and also a witness who had previously owned the pony to prove that it was subject to gripes.

Having done this, *Mr. Watson* asked Mr. Taylor if he approved of gin and linseed oil?

His answer was, *any stimulant* which was at hand might be used until advice could be had. The oil he had no objection to.

Mr. Park, in reply, contended that if the defendant took the pony without leave, he was clearly liable for anything that should happen to it whilst in his custody; and that even supposing the pony had been

lent, as stated by the defendant, the treatment it had received was improper, and showed such an amount of negligence on the part of the defendant as would render him liable for the value of the pony. He particularly alluded to the evidence of Mr. Taylor, the veterinary surgeon, as to the cause of death. *Mr. Park* also contended that the defendant ought, in the first instance, to have sent for a veterinary surgeon, and that instead of so doing, having taken upon himself the responsibility of prescribing for the pony, he had, according to the ruling of Lord Ellenborough in the case of *Dean v. Keate*, rendered himself liable for the consequences.

The judge having carefully summed up the evidence, the jury returned a verdict for the plaintiff.

Stamford *v.* Kirk.

The plaintiff was a carter, residing at Hull; and the defendant a farmer, residing at Hedon.

The action was one to recover the sum of £10 1*s.* 6*d.* for damages for a breach of warranty by the defendant, on the sale of a horse by him to the plaintiff.

Mr. Roberts, of the firm of England, Saxelbye, and Roberts, of Hull, appeared for the plaintiff; and *Mr. Watson*, of Hedon, for the defendant.

The plaintiff, in his examination, proved that he met the defendant in a public-house at Hedon, one day during the latter part of August last. He wanted a horse, and some conversation ensued between them as to a horse belonging to defendant, which he said would just suit plaintiff. Eventually they went to a field where the horse (the subject of the action) was ploughing, and some further conversation took place between them, in which defendant said it was a good, honest, and sound horse. These words, or others similiar, were again used on their returning a few minutes afterwards to the public-house, and plaintiff agreed to take the horse for £18. Shortly afterwards he found it to be unsound, and it was sold by public auction and realized £9 5*s.*, which, after deducting the costs of sale and keep, made the plaintiff a loser of £10 1*s.* 6*d.*, which sum he sought to recover by the present action.

The landlord of the public-house, *Mr. Josiah Maddison*, was called as witness for the plaintiff, and when examined by *Mr. Roberts*, completely corroborated the plaintiff's evidence as to the words used by defendant; but on his cross-examination by *Mr. Watson*, he altered his statement considerably, and appeared not to be aware that the words alleged by plaintiff had been uttered in his hearing by defendant.

Mr. Henry Taylor, of Hull, veterinary surgeon, was also called by plaintiff, and proved the horse to be unsound from stringhalt in both hind legs, and bone-spavin of the near hock, and also lame in the off fore-leg.

The defendant did not deny the unsoundness, but denied giving any warranty or making use of the words alleged by the plaintiff. The evidence on his behalf was of the contradictory nature usual in these cases.

His Honour, in summing up, told the jury that if they believed the defendant had used the words "good, sound, and honest horse," as alleged by the plaintiff, he should rule that to be a warranty, and their verdict must be for the plaintiff.

The jury, however, returned a verdict for the defendant.

CENTRAL CRIMINAL COURT, April 8th.

HORSE DEALING.—"COMMISSIONS."

William Vere Dawson Hunt, a tall, gentlemanly-looking man, who was stated to have been a captain in the army, surrendered to take his trial upon an indictment charging him with obtaining £25 by false pretences.

Mr. Metcalfe and *Mr. Poland* conducted the prosecution; *Sergeant Ballantine* was specially retained, with *Mr. Ribton*, for the defendant.

This case, it appeared, was removed by *certiorari* from the Middlesex Sessions.

The prosecutor was a gentleman named *Hackblock*, residing at Reigate, and the charge arose out of the following circumstances:

It appeared that the defendant and some other persons had established a sort of horse registry in the metropolis, and professed to act as brokers between the sellers and purchasers of horses, the principle of their business being to receive a commission of 5 per cent. from both parties. In January last the defendant sent to Mr. Cox, a solicitor in Coleman Street, a list of horses that were upon his register, and it appeared that at this time the prosecutor, who was a friend of Mr. Cox, was in want of a pair of carriage horses, and he asked the defendant to let him know if he heard of two that were likely to suit. In the course of a few days the defendant wrote a letter to the effect that he had found a pair of horses that would just suit, and that the owner wanted £150 for them, but that, after a great deal of trouble, he had induced him to take £135 for them, but not a shilling less. This was communicated to Mr. Hackblock, who went to see the horses, and liked them, and agreed to purchase them if they were passed by a veterinary surgeon as sound. The horses after this were sent to Mr. Field, the veterinary surgeon, to be examined, and he gave a certificate that was satisfactory to Mr. Hackblock, who agreed to give the sum mentioned for the horses, and he handed to the prisoner £140 in Bank of England notes, £135 of that sum being the price agreed upon, £6 15*s.* for commission, and 5*s.* for the groom. The horses were then delivered to Mr. Hackblock, and shortly afterwards one of them was discovered to be restive, and unfit for the purpose for which he had purchased it, and he was therefore anxious to return them. This, however, he found he could not accomplish, and, upon his making inquiry, he ascertained that the defendant had purchased the horses in question from the person to whom they belonged for £110, and that he had pocketed the £25 in excess of that sum that was paid to him by the prosecutor. It also appeared that the highest price ever asked for the horses was £120, and that the sum of £150 was never mentioned.

The Recorder, at the close of the case for the prosecution, expressed his opinion that the present indictment could not be supported. In order to make out a charge of obtaining money by false pretences it was necessary to prove that there was a false statement to the knowledge of the party, in reference to some existing fact, but here all that was proved was that the prisoner stated that he should pay over the money he received from the prosecutor to some other person at a future time, which, in his opinion, did not amount to false pretences.

The jury thereupon, under his Lordship's direction, returned a verdict of Not Guilty.

There was another indictment against the defendant, in which he was charged with the offence of larceny, arising out of the same transactions; but no evidence was offered in support of it, and the jury therefore again returned a verdict of Not Guilty, and the defendant was ordered to be discharged from custody.—*The Times.*

MISCELLANEA.

REMARKABLE INSTANCE OF CANINE ATTACHMENT.

A CIRCUMSTANCE occurred very recently at Portree, Isle of Skye, which may be added to the many chapters recording the fidelity and attachment of dogs to their masters. A rumour spread through the town one morning that on the previous night the dogs had torn open the grave of a young man who had died of fever, and was interred some weeks previous. So painful and shocking an occurrence caused great excitement in Portree; but in the course of the day Sheriff Fraser and others, having inquired into the facts of the case, found the facts to be not only of a less revolting nature, but fraught with the deepest interest. When the young man was buried, his dog followed the funeral to the churchyard, and was with difficulty removed. It returned again and again to the spot, and, unobserved, had dug into the grave until it reached the coffin. At Portree, as in many other parts of the Highlands, the people bury their dead in a very superficial manner, making only shallow graves. The dog had gnawn through the coffin when the fact was discovered, but the body of its dead master was untouched; and there the faithful animal was found eagerly looking into the grave. "I doubt," says our correspondent, "if there be on record a more striking instance of canine attachment; for you must bear in mind that four or five weeks had elapsed since the interment, and the churchyard is six miles from the house where poor Norman's father lives."—*Inverness Courier.*

SALE OF MR. JONAS WEBB'S STOCK.

OWING, we deeply regret to hear, to his failing health, Mr. Jonas Webb has determined not to breed or let any more Southdowns, and to sell his ewes and rams, amounting to about a thousand, without any reserve, and Messrs. Strafford and Carter Jones (to whom the sale is jointly intrusted) have

chosen July 10th, the Wednesday before the Royal Agricultural Society's meeting, for that purpose.

It will be just five-and-thirty years next July since Mr. Webb entertained the guests at his first ram-letting. John Duke of Bedford, "Richmond," "Portland," and the Earl of Ducie, have all swelled that throng. "Two thousand, at least," says a writer in the *Farmer's Magazine*, "rallied round Mr. Webb in the year of the Cambridge Royal meeting, and and it was then that the Duke of Richmond, with rare foresight, made his first 100-guinea offer for a ram lamb which was destined to win the head Royal prize at Liverpool and Bristol in succession, and finally to earn his name 'Clumber' from the home of another noble hirer. Dick Gurney, the best 'jockey of Norfolk' across the pastures of the Pytchley and Quorn, was not thought 'too bold' when he offered 360 guineas in vain for Thickthorn (whom he had hired the year before) and his sons Babraham and Cantab. The agents of crowned heads have also been busy each July in the new letting meadow; and the Emperor of the French paid his tribute to the 'dark faces' at the Paris Exhibition of 1856, by the presentation of a piece of plate to Mr. Webb, with the 'truly British' design of a couple of blood-mares and their foals standing under the shade of a gnarled ivy-grown oak."

The old long-horned Norfolk rams, whose narrow backs and sharp spines proved such a very uncomfortable seat for Mr. Webb, when he used to ride them in his boyhood at West Wickham, and set him a thinking in his maturer years, live only in story at Babraham now; and not one even is kept as a relic. Originally there were three tribes, but a fourth and fifth have been added; and Mr. Webb never hires rams, as he can always keep the blood sufficiently distinct without it. In number the tribes are nearly equal, and they have all produced prize sheep; and from 120 to 140 rams have been let annually. Besides the elaborate ear-marks, and divers others on the shoulder and hip, they have cabalistic crosses of green above yellow, blue above red, and so forth, on their sides, which tell their descent at a glance to their owner's eye, and furnish an unfailing clue when they rise to ram-hogget estate, and are ripe for entry in the flock-book. The Old Babraham shearlings nearly all averaged 8lbs.; and if their fleeces do not come up to 7lbs. the ewe-hoggets are sold to go abroad.

Mr. Webb never sells ewes in England—he has a few from twelve to thirteen years old, and he has bred from them at fourteen; but the rams are seldom let beyond their seventh

season; and the heaviest of them have killed to 50lbs. a quarter. Plenipo, who was a yearling in 1834, when his great chestnut namesake and neighbour was in his zenith, swelled the tide of Southdown success for Mr. Webb; and The Gentleman, Clumber, Liverpool, Shrewsbury, Derby, Young Elegance, Gloucester, The Captain, and Old Uncertain, &c., have never suffered it to ebb. Old Duke, who has the Babraham flock blood in him for ten generations on the dam's side, achieved 410 guineas at three lettings. In one of them Mr. Henry Overman bid 169 guineas; and the Duke of Richmond made it even money, and got him.

Mr. Webb's career has been pretty nearly one continuous triumph in the Royal shearling ram classes (the only ones in which he exhibits); and he "skinned the lamb" so completely at Canterbury, that his customers made a truce with him, and begged him not to show against them at Leeds.—*Illustrated London News.*

A FAST HORSE.

Uncle Peter B., who flourished a few years ago among the mountains of Vermont as an inveterate horse-dealer, was one day called upon by an amateur of the "equine" in search of "something fast." The result is told as follows in the 'Northern Gazette:'—"There," said Uncle P., pointing to an animal in a meadow below the house—"there, sir, is a mare yonder who would trot her mile in two minutes and twenty seconds, were it not for one thing." "Indeed!" cried his companion. "Yes," continued Uncle Peter; "she is four years old this spring, is in good condition, looks well, and is a first-rate mare; and can go a mile in 2:20, were it not for one thing." "Well, what is it?" was the query. "That mare," resumed the jockey, "is in every way a good piece of property. She has a heavy mane, switch tail, trots square and fair; and yet there is one thing only why she can't go a mile in 2:20." "What in the Old Harry is it then?" cried the amateur, impatiently. "The distance is too great for the time," was the old wag's reply.

OBITUARY.

Died, April 1st, at Brabourne, Kent, Mr. Robert Grey, M.R.C.V.S., æt. 40 years. His diploma bears date August 23d, 1848.

THE

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Communications and Cases.

ON THERAPEUTICS.

By Professor Brown, M.R.C.V.S.,

Royal Agricultural College, Cirencester.

(*Continued from p.* 257.)

SEDATIVES.

Sedatives are distinguished from narcotics, as agents which immediately depress without producing any previous excitement. Although we are hardly justified in endeavouring to preserve such a distinction, as not one of the most decided sedative agents possesses this single property of directly depressing, without first exalting nervous action. Even hydrocyanic acid, aconite, and digitalis, produce symptoms of excitement more or less intense, according to the quantity administered and the condition of the system at the time; while, on the other hand, such an undoubted narcotic as tobacco may not occasion any perceptible stimulant effects at all.

It would be most convenient to include sedatives under the general head of narcotics; or, at any rate, to unite the two classes under a common denomination, which should express the peculiar and distinctive action of all those agents, which are now unnecessarily disconnected in classification, while their properties naturally associate them together.

The two terms, sedative and narcotic, are, however, so universally accepted as expressive of two distinct phases of medicinal action, that we do not feel justified in attempting their union, particularly as we have at least one seda-

tive agency in bloodletting, which may fairly claim to have the property of diminishing action without occasioning any previous excitement at all allied to the action of a narcotic drug. In accepting the classification, we may premise that the term sedative shall be restricted to those agents which least resemble narcotics in their primary effects, and again that a further qualification is necessary, referring to the dose of the agent selected. The difference in the effects of the same drug in different doses, and under various methods of exhibition, has already been insisted upon; it is not therefore unreasonable to require that the term sedative shall be absolutely restricted to those doses, and those methods of administration, which are found to result in the most direct depression to the avoidance of any primary excitation. Sedative action, we may also observe, properly excludes that peculiar stupefying effect which is one of the most decided indications of narcotic action.

The agencies which are capable of inducing this direct depression are not numerous—they comprise bloodletting as the most decided, and the drugs, hydrocyanic acid, digitalis, and aconite; the selection of either of these means will be regulated by a number of circumstances, but it is understood that either or all may be applied to the treatment of those derangements in which the principal elements are excited—nervous and vascular action. The use of sedatives in cases where no inflammation is present, or even threatened, merely for the purpose of allaying pain, or decreasing muscular action, is to a certain extent a diversion of them from their legitimate object; undoubtedly they act as anodynes, and also as antispasmodics, but these actions are developed in a more eminent degree by the true narcotic medicines, which are always equally available.

Sedative action is, under ordinary circumstances, only preferable to narcotic action when the exalted nervous and vascular functions do not arise from any local irritation or pain, but from a general and diffused excitement or morbid sensibility that cannot be referred to any particular part of the organism, but which is always associated with some degree of inflammatory action. In such instances, it may sometimes be a question whether the most direct advantage would follow from the operation of an agent upon the nervous system, and indirectly upon the circulating organs, or from the direct influence of the sedative upon the heart, leading to an immediate cessation of its excessive action. In many cases the principal apprehension arises from a continuance of the excited action of the heart forcing blood into an organ

already overcharged; under such circumstances, the temptation is strong to have recourse to those measures which promise a direct and immediate relief, nor can any objection be urged against this course upon an emergency, but, as a general system, the employment of nervous sedatives is more satisfactory ultimately, when there exists no necessity for a sudden production of the sedative action.

Bloodletting is the most direct method of diminishing the activity of the organic functions to any required extent, according to the amount of circulating fluid removed. When the art of medicine lacked its present refinement, bloodletting stood high in estimation as a remedy for every form of disease associated with excess of function or structure: like all popular remedies it has been terribly abused, and, by a necessary reaction, has come to be looked upon by modern science as a relic of empiricism, a rude method of attaining an end that may be reached in other though commonly more circuitous routes. Not to have had recourse to the lancet for so long a time amounts to a special merit in some persons' ideas, and a boast to the effect is no unfrequent occurrence during a medical discussion, an individual urging the fact under an apparent conviction that his self-denial deserves commendation.

In spite of all that has been said and written upon the question, a consideration of the pro's and con's may not be out of place.

The sedative effects of bleeding undoubtedly depend, at first, upon the decrease in the bulk of the mass of blood in circulation; a certain quantity of fluid is necessary to furnish a stimulus to the heart and vessels, and the sudden decrease in the amount, therefore, leads to a temporary interruption in the circulation, or in the event of the abstraction being continued beyond a certain point, to a cessation of the heart's contraction, and death by syncope. The high nutritive value of the fluid can hardly be taken into calculation, in estimating the immediate effects, as no time is afforded for an action through the medium of the nutritive functions, nor is it necessary to follow this line of argument, as the occurrence of similar phenomena from excessive perspiration, and the actively restorative action of a quantity of fluids, under such circumstances, sufficiently show that the loss of bulk is the principal if not the only cause of the sudden depression; the nervous system will of course instantly suffer from the withdrawal of its natural stimulus.

However decided the effects of venesection, they are generally evanescent; in a short time absorption of fluid from

every available source supplies the loss, and reaction of various degrees of force occurs; the repetition of the operation sufficiently often to continue the depression is impossible, on account of the important nature of the fluid rendering its repeated removal productive of very serious consequences, and hence bloodletting is only justifiable when an immediate effect upon the circulation is necessary.

In any form of local hyperæmia, the withdrawal of blood may effect a restoration of the balance of circulation, not by removing blood directly from the part, but by generally diminishing the volume of the fluid, and lessening the energy of its flow, and allowing time for the removal of the local excess by the veins. It is found that repeated bleedings occasion the diminution of the red particles of the blood, and the increase of the fibrinous element, thus in two ways, at least, impairing its constitution. Another peculiarity connected with periodical bleeding is the occurrence of symptoms of plethora, or fulness, if the operation be postponed beyond the usual time, not merely at certain seasons of the year, which might account for a particular condition of system, but in cases where the operation has been performed systematically at frequent intervals; this tendency on the part of the organism to accommodate itself to a certain course of unnatural treatment, is frequently exemplified in a variety of instances.

The principal objection to bloodletting under ordinary circumstances, seems to be the absence of a direct necessity for such treatment, save in those decided cases of local excess where an immediate cessation of the supply is desirable. When the indications are not urgent, other sedative agencies answer the same end, generally more perfectly; and hence the present disfavour in which the operation is held arises in a measure from a natural and well-founded dislike to the performance of an operation, however simple, which is not required, and which may be efficiently represented by less energetic methods of treatment. It seems to us unlikely that venesection will ever again attain its former place among scientific practitioners, but to the unlearned it offers a ready though coarse means of effecting what their ignorance of therapeutics does not enable them to effect in any other way.

Bleeding we believe to be advisable, not indispensable, in acute inflammation, and congestion, but it can hardly be defended under any other circumstances, presuming the surgeon to have unlimited command of medicinal agents.

Hydrocyanic acid is not much used in English veterinary practice; physiologically its action is narcotic, but introduced

into the system in small quantities it appears to produce depression, unassociated with any indications of excitement.

Hering directs its use in pulmonary consumption in the horse, and in epilepsy and madness in the dog; by the French veterinarians it is also recommended in various nervous affections, for example, tetanus, epilepsy, rabies, and chorea. It acts most energetically when injected into the circulation, and although its influence is principally upon the nerves, it affects them through the medium of the circulation. M. Panizza found its effects to be equally marked when it was applied to the lips of rabbits, and the tongues of dogs, after the nerves had in both cases been divided. M. Vibourg found no poisonous action to follow its contact with the brain of a horse after trephining, while its injection into the veins is immediately followed by death as from a lightning stroke.

Its sedative influence is best developed when it is given as an enema, by which plan the preliminary excitement is avoided.

As a local application, we have found it useful in the irritability that often occurs in the convalescent stage of ophthalmia, when the eye is intolerant of light; a drop placed in the organ, although at first productive of redness and irritation, ultimately lessens the nervous excitability; in the form of lotion, composed of three drachms of acid to a pint of water, it may be applied in cases of irritation of skin, in the dog particularly.

Internally, it may be given to the horse in quantities of thirty to sixty drops in water, as a draught or enema; for the dog a mixture of ten to twenty drops in four ounces of water, given in portions of a tablespoonful at a time, the mixture is very efficacious in allaying gastric irritation in this animal, accompanied with constant vomiting.

From the powerful nature of the drug it is most probable that its use might be considerably extended in the treatment of diseases in which exalted nervous action is a prominent element.

Digitalis.—Next to bloodletting this drug is the most direct sedative to the circulatory system, there is no question of its peculiar power; as an intermittent pulse is the common result of a few doses, hence when bleeding is no longer admissible the agent may be exhibited in doses of one drachm to two drachms, according to circumstances; the larger dose will not require repetition until some time has elapsed; the smaller one may be repeated every four or six hours, until the desired effect results. The action is cumulative, and con-

sequently much caution is necessary to avoid its poisonous effects; when, therefore, it is desired to continue the action, the exhibition of the drug should be interrupted every two or three days; loss of appetite is held to be the warning sign, but in acute diseases this symptom is often consequent on the malady, and will not therefore be of any value.

Associated with the sedative action of digitalis upon the heart are its two further effects of irritation to the mucous tissues, and a well-marked diuresis, the irritative effects may be avoided by using the smallest doses consistent with the production of the action sought. The action upon the secretive function of the kidneys renders the drug very valuable in the treatment of various forms of effusion, as hydrothorax and ascites.

An infusion of digitalis is recommended as a lotion for irritation of the erysipelatous kind; it has occurred to us to employ it with benefit in the treatment of a peculiar irritation to which the scrotum of sporting dogs is liable.

Aconite.—This agent is compared to digitalis in its action upon the circulation, and its diuretic property; given in small doses we have observed it to diminish vascular and nervous excitement, and when administered with care, no ill consequences follow its use; the dose we ordinarily give to the horse and ox is ten drops of Fleming's tincture in water. Half a drachm in one case produced considerable excitement, accompanied with spasm of the muscles of the neck and head, and discharge of saliva; the smaller quantity never occasions these symptoms, we have exhibited ten drops at intervals of two hours, for three or four doses, and we have given to a healthy horse four drops, twice a day, for three weeks, without inducing any decided indication of its influence upon the system beyond the production of a general quietude; in these doses, then, the drug is perfectly safe, and sufficiently powerful in its action to produce the sedative effect we require.

Aconite is effective in inflammation of various parts; in the constitutional fever from wounds or injuries, in acute rheumatism, and in a remarkable degree after parturition, when a certain amount of excitement remains, and commonly culminates in puerperal apoplexy.

Externally we have employed the agent in the form of lotion to inflamed joints after sprain, and in rheumatic affections, with marked benefit, we have also used it with advantage in the treatment of the so-called "mud fever," of the hunting field, that irritable condition of skin, accompanied with loss of hair, very readily yields to its action; one ounce of the tincture (Fleming's), with a gallon of water, is sufficient for

the sedative lotion, although there is no objection to a larger proportion of aconite if a more decided effect be desired. From the opportunities we have had of testing the agent, we have every reason to recommend it to the veterinary practitioner, as a remedy of great power in all disease, whether local or general, in which it may be necessary to diminish excitement.

REFRIGERANTS.

The ordinary temperature of the animal body is subject to very slight modification, according to thermometric experiments. In the most violent fever, the blood only indicates a few degrees of elevation, while under even the fatal effects of cold, very trifling loss of temperature is perceived. Notwithstanding the preservation of an almost uniform degree of heat in the interior of the organism, the surface undoubtedly suffers from change of temperature to a considerable extent, and occasions sensations of heat or cold proportioned to the amount of the disturbing influence.

The causes which give rise to these alternations of temperature are of two kinds, what we may term physical and vital; physical when the temperature of the part is changed, in consequence of the contact of a foreign body of a different temperature; and vital when the alteration is consequent upon nervous and vascular action; the physical causes at first produce merely local effects, which, however, soon become general; if the causes continue to act for any lengthened period, the impression upon the extremities of the nerves is soon extended to the centres, from whence it is distributed to the entire body; thus hot or cold media in contact with the surface, or any part of it, occasion first a change of temperature in the part, and subsequently involve the system in the same general condition. Vital causes originate from within, and frequently act independently of and even in opposition to external conditions. Anæmia, exhaustion, extensive congestion, and sphacelus, are associated with shiverings, which no surface-warmth can diminish; while fever may be accompanied with heat that a freezing atmosphere would hardly suffice to decrease.

The term "cooling," as applied to medicine, is popularly used in reference to agents belonging to various divisions; thus among cathartics, the acid salts, as sulphate of magnesia, and soda, and bitartrate of potash; among diuretics, the nitrate of potash; and among diaphoretics, the diacetate of ammonia, have a refreshing effect upon the system, improving the secre-

tions and diminishing fever, thereby justifying, in a measure, the use of the epithet, but as ordinarily used the term "refrigerant" is meant to designate an external application whose direct action is to lower the temperature of the part with which it is brought in contact. Whatever difference of opinion may exist respecting the action of refrigerants, can only affect the question of secondary consequences, the direct result must be diminution of the temperature of the part, or the proper action is not developed.

The various agents are: water, alcoholic solutions, and solutions of acetic acid or the diacetate of lead. Of these, water is probably the most usual and most effective, its action upon the temperature of a part is due to its own temperature being lower, and its cooling effects, therefore, are in direct proportion to the amount of the difference, consequently whatever lowers the temperature of the fluid increases its refrigerant action, and in the form of ice we may consider it to be the standard of refrigerant agents. Mixtures of ice or snow with water, or soluble salts in certain proportions, abstract heat from the fluid in which they are being dissolved, and so render it more efficacious. Alcoholic solutions occasion the abstraction of heat during the evaporation of the alcoholic portion. Some agents exalt the sensibility of the part, and render it more susceptible to the sensation of cold; in this way solutions of acetic acid and the acetates exert a sedative influence upon the local excitement, in addition to the effect of the cold water to which they are united. The choice of either of these forms will depend upon the state of the part under treatment. Where the object is to lessen the amount of blood, or to prevent determination, ice or otherwise water whose temperature is rendered as low as possible are desirable from the ease with which any quantity can be applied. Local irritation, accompanied with much pain, will require the employment of the sedative solution of diacetate of lead; while in cases of chronic and indolent deposits, the debilitated vessels will be strengthened, and the circulation improved, by the solution of acetic acid.

During the application of refrigerants of either kind it is necessary to leave the part as far as possible exposed, in any case using no more covering than is actually necessary to support the material saturated with the solution. When consistent with the attention which the attendant will probably have to afford to other animals, a frequent use of the fluid by means of a sponge is superior to any other method of application; where, however, this is not convenient, a little lint or fine tow may be retained lightly upon the part. The addition of oil-silk or

gutta-percha, or even of dry coverings, upon the saturated lint entirely destroys the refrigerant effect, as the dressing soon becomes of the same temperature as the part, softening the surface, and promoting exhalation from the skin, acting, in short, very beneficially under certain conditions, but not as a refrigerant at all. In hydropathic practice, the use of external coverings is almost constant, and the current ideas respecting the effects of cold water, therefore, in many instances originate in observations of the action of the fluid under such circumstances, when its temperature is very considerably elevated. If the douche be employed under the hydropathic system, we have of course the primary refrigerant action, and the subsequent reaction, as in all cases where cold is directly applied.

The physiological action of refrigerants is easy of demonstration; for example, contraction of the vessels and diminution of blood in the part are the uniform and invariable consequences. If the temperature be sufficiently low, pallor and loss of sensation, and even motion, are immediately occasioned; under a less degree of cold, the primary impression is less marked, and an irregular contraction of vessels may cause a quantity of blood to be retained in the veins, producing a red or even livid blue colour of the skin. The plan of putting a limb into cold water, for the purpose of lessening the quantity of blood in the vessels, is perfectly familiar to veterinary practitioners, and illustrates very completely the action of cold upon the vessels. After a few hours' constant application, it often occurs that no blood escapes from divided vessels until reaction takes place.

The return of the blood to the vessels is termed "reaction," and occurs at different periods after the cold is discontinued; if the vessels retain their tonicity, a few minutes only will elapse; if the cold has been so intense or so long continued as to impair it, reaction may not occur for half an hour; and if the vitality of the part is destroyed, it does not happen at all; in some instances it is defective, and may require stimulation; in other cases the return of blood amounts to excessive reaction, and necessitates the use of antiphlogistic measures. The occurrence of reaction during the operation of cold is asserted by the hydropathic schools, but we have not met with an instance of it. In the ordinary method of preparing a horse for the operation of neurotomy, generally not more than two or three hours are required to sufficiently diminish the amount of blood in the limb; but we have known animals to stand in water for at least twenty-four hours, and at the

end of that time to have scarcely a drop of blood in the vessels of the skin.

The therapeutic action of refrigerants is usually very decided, and should only be sought under peculiar conditions.

1st. When inflammation is impending. After the occurrence of an injury, a certain period, often a very limited one, precedes the inflammatory stage; at any time during this short period, cold water, iced if possible, continuously applied, is productive of most satisfactory results, often preventing inflammation entirely, or otherwise moderating the violence of the attack. The instances in which cold applications may be used with this view are numerous; contusions, sprains, fractures, wounds, and burns, under ordinary circumstances, may be advantageously so treated, before the symptoms of inflammation present themselves.

After inflammation is once fairly established, however, refrigerants are in every way injurious; they occasion much unnecessary suffering, they render the surface hard and tense, and, by lessening its power of expansion, prevent swelling and exudation, and thus offer a serious obstruction to the natural method of relief for the distended vessels, and diminish the chances of an early resolution.

2d. When inflammation has nearly or quite subsided, leaving a morbid sensibility or relaxation of the tissues, or a sluggish ulcerating surface, cold will be beneficial in lessening the irritation, and strengthening the weakened parts; in such cases, cold water poured from a height, or dashed on the part, is very effective.

3d. In subacute inflammation or simple irritation, refrigerants are indicated, medicated or not, as the state of the part may require. Cold acts quite as effectually when the irritation is beneath the integument, as in subacute or chronic laminitis, or the excitement succeeding a slight sprain. The constant application of cold water diminishes not only the heat, but, what is of more importance, the extreme sensibility of the injured textures.

4th. For the purpose of arresting slight hæmorrhage, cold is a valuable agent; in cases of bleeding from small points, not to be grasped by forceps, or encircled by ligature, and where the actual cautery is unnecessary, cold water, poured upon the bleeding surface, or applied by means of lint or fine tow, or even a stream of cold air from the tube of a bellows, will effect contraction of the wounded vessels, and lessen the amount of blood in the part.

Under whatever conditions it may be desirable to temporarily repel the blood from the surface vessels, refrigerants in

some form present themselves as ready means by which the object may be gained. Hardly any serious objection can be urged against their employment under any circumstance, if we except the few instances mentioned of active inflammation or the formation of an abscess; in either of which cases, refrigerants are obviously contra-indicated.

(*To be continued.*)

COMMERELL *v.* STEVENS.

Note from Mr. W. Mavor, M.R.C.V.S., 77, Park Street, Grosvenor Square.

Gentlemen,—In your issue of the *Veterinarian* for the month of April I perceive that you have transcribed from a newspaper the report of a trial, headed "*Commerell* v. *Stevens.*" In that report the following remarks occur, which it is necessary for my purpose that I should extract: "However, the horse was subsequently sent to Mr. Mavor, the veterinary surgeon, who used all his skill to cure him, but nothing could be done with the eye, as something had broken the outer coating of the ball of it, causing a quantity of the humour to escape. *Mr. Mavor told Mrs. Commerell that the sight was irretrievably gone*, when the horse was sent back to Tattersall's, and sold for forty guineas." . . "The horse was sold after it left Tattersall's for forty-seven guineas, was resold at the same price, and, eventually, Mr. Baker, a veterinary surgeon, of Clapham Common, sold him to a Mr. Edgar for £100, *the horse's sight being then perfect.*"

The report contains an erroneous statement of a fact, for it is therein asserted, *on the part of the defence,* that *the sight* of the injured eye *was restored.*

Now, in justice to myself, I cannot permit that your readers should be led by such a statement to entertain a belief that my representation in a matter, *not of opinion, but of fact,* was so egregiously absurd.

The horse was sent to me *immediately* after the occurrence of the accident; on the 23d of July, and remained in my charge during the subsequent six weeks. At the expiration of this time the eyeball had receded within the orbit, leaving no hope whatever of a restoration of vision.

In confirmation of the correctness of this I have received the subjoined note from the gentleman who purchased the

horse of Mr. Baker, which I beg you will do me the favour to insert, in conjunction with this communication, in your next number.

I am, gentlemen,
Your obedient servant,
WILLIAM MAVOR, M.R.C.V.S.

To the Editors of the 'Veterinarian.'

PICCADILLY; *May* 15, 1861.

MY DEAR SIR,—In answer to your inquiry respecting the horse I bought of Mr. Baker, viz., the horse sold by Mrs. Commerell in consequence of an injury to his eye, I have much pleasure in giving you the following particulars.

I bought him with *the full conviction* of his being blind, *irrevocably blind*, although hopes were held out that he might recover his sight in the injured eye. I overlooked this defect owing to his being so perfect a match in colour, size, and action, for a horse I had purchased some time before for the same gentleman in Paris.

He is still blind of the eye, and ever will be.

I was told at the time I bought him that the accident happened from his disinclination to be shod.

I was never more surprised at anything than at the evidence and verdict given at the trial respecting this same horse.

I am, my dear Sir,
Very truly yours,
GEORGE EDGAR.

W. Mavor, Esq.

A SINGULAR CASE OF DYSPNŒA IN THE HORSE.

By T. GREAVES, M.R.C.V.S., Manchester.

I BEG leave to send you a description of a case that has just occurred in my practice, partly because it presents phenomena of more than ordinary interest, and also because it is just such a case which, by reflecting upon, the mind is enabled to catch glimpses of some of nature's secrets that otherwise might be obscure and unintelligible.

The subject was a grey cart-horse, five years old, in good working condition. Up to the 24th ult. he was to all appear-

ance in perfect health, and working regularly. On this day he appeared slightly ailing, dull, and off his feed. The pulse was also a little accelerated. On the 25th he evinced slight soreness of his throat, and coughed. His throat was stimulated twice on this day. Early on the following morning he was found to be breathing with great difficulty, his respiration being accompanied with a considerable snoring noise, and to such an extent that suffocation appeared imminent. It appeared to me to be a case of acute laryngitis, and as such I applied at once an active blister over the region of the larynx. I saw him again in a few hours, and found that the difficulty of breathing had considerably increased. It was painful, in the extreme, to witness his sufferings; his flanks heaved and fell rapidly, and he perspired so copiously that he might be said to steam almost like a seething cauldron. It was quite evident he would soon sink from suffocation, unless something was done to relieve him. It, indeed, was one of those desperate crises in which the practitioner is in duty bound to employ on the instant any remedy, however desperate, that science, or his past experience indicates. Accordingly, I introduced at once an ordinary tracheotomy tube; but, strange to say, no relief was obtained. After waiting about half an hour, I had another tube made of double the calibre of the former one, and inserted it into the opening of the trachea, but with the like result. He roared nearly as loud through this tube as he did when the air was forcing its way through the larynx, and to all appearance he could not live long.

Finding that no relief took place, I called upon my friend Mr. Lawson, veterinary surgeon, of this town, and requested him to see the case with me, which, with his customary good will, he at once did. The tube had now been in from three to four hours, and still no relief was afforded. I removed the tube in Mr. Lawson's presence, and placed my hand over the aperture, so that he might observe the case in its extreme severity. The roaring through the windpipe and nostrils was so distressing, that he suggested that the tube should be at once put in again. He considered the operation was an imperative necessity; and, notwithstanding that it still appeared a desperate and hopeless case, he advised me to apply a blister along the whole course of the trachea, which was done. The following morning there was no abatement in the severity of the symptoms. I took out the tube, cleansed it, and again replaced it. At night there was still no improvement. I again took out the tube and replaced it as before; but it being thought that he breathed somewhat easier whilst the tube was out

than when it was in, I removed it a second time. Immediately after this he coughed, and forced about two tablespoonfuls of mucus through the aperture. This he did again once or twice, which appeared to relieve him considerably. Subsequently his breathing became more and more tranquil, and convalescence ultimately took place. He continued to breathe through the aperture to a greater or less extent for seven or eight days. The opening soon closed up, and I cannot now perceive that he is a roarer in the slightest degree, notwithstanding I have put him to severe tests to determine the point.

Remarks.—My first impression was, that the horse had been a roarer previously to this attack, that the larynx was in a state of rigidity, and that the lining membrane of the organ had become the seat of severe inflammation, which had produced a thickened and swollen state of it to such a degree as to diminish the calibre of the air-passage. When, however, I gave him free entrance below the larynx to the air, and contrary to every case I had operated upon before no immediate relief was afforded, then I wavered in my opinion, and felt disposed to view the case as some peculiar spasmodic affection of the *transversalis* muscle of the trachea and bronchial tubes. This opinion, I think, is favoured by the rapid attack, and the sudden departure of the dyspnœa after thirty-six hours of most distressing suffering. Can the symptoms be referred to acute larnygitis in the first instance, causing an accumulation of a quantity of mucus in the trachea, which, together with the escape of a small portion of blood into the tube from the operation, formed a partial mechanical obstruction below the opening, and that coughing broke down the barrier?

[In the year 1831 an analogous case to the above occurred in the practice of one of us, which was regarded at the time as being one of partial paralysis of the muscles of the larynx. The patient was an aged cart-mare. She was suddenly attacked with difficulty of respiration, to such an extent as to threaten suffocation, and to render the immediate operation of tracheotomy necessary. A singular feature of the case was, that the respiration was better performed when the animal was recumbent. She experienced but little relief for about a week, after which, however, she gradually recovered. The treatment had recourse to was similar to that adopted by Mr. Greaves.]

REMARKS ON PARACENTESIS THORACIS.

By the Same.

I was much pleased with the remarks made by Assistant-Professor Varnell on the case of hydrothorax recently published by Mr. Stevenson in the *Veterinarian*. We all of us, alas! see too many cases which terminate in effusion into the chest, and any remarks that will tend towards the collection of practical data ought to be recorded. I, like Mr. Varnell, believe that effusion takes place more or less in numerous cases that ultimately recover. I have seen cases where other veterinary surgeons as well as myself have looked upon it as certain that fluid existed in the chest, and still the animals have gradually recovered, and returned to work in apparently perfect health. I have also often operated upon cases, and drawn off large quantities of fluid, but in every instance unsuccessfully. I have likewise given alum, as well as sulphate of iron, hydriodate of potass, &c., but without any satisfactory result. I am, nevertheless, of opinion that we feel far too great timidity about operating. We hesitate too much. We estimate it as an operation entailing far greater risk and danger than exist in reality. I have felt this so strongly that I recently made an experiment, the particulars of which I will now give you. As far as it goes, it is very encouraging in cases where it is decided to perform the operation. I am quite opposed to vivisectional cruelties, but in this instance the amount of suffering that was entailed was so little, that I believe the most zealous member of the Society for the Prevention of Cruelty would not have made any complaint about it.

The subject was an aged horse. In the autumn of last year he was sent to the knacker's yard to be killed; but the man not requiring him at the time, he was turned into some fields. He appeared to be a healthy animal. On 26th of October, 1860, I made three incisions through the skin with my lancet, and passed the ordinary trochar canula into the chest on the near side. Quantities of air were allowed free ingress to the thorax, after which the animal was let loose, when he walked away and commenced grazing, as if nothing had occurred. On 2d of November I repeated the operation, selecting a spot about two inches from the other incisions. On the 9th three more incisions were made, and repeated on the 16th, and again on the 23d.

On the 26th he was destroyed. It must be remembered the operation only occupied about two minutes each time. I had

a twich put upon him in the field, and, as before stated, when liberated, he went about his grazing at once, as if nothing had occurred. It did not appear to affect his breathing or his health, or to cause any cough; and I felt amazed when I examined the *pleura pulmonalis* and substance of the lungs, and found them to be perfectly healthy. The place of the last three punctures could be distinctly seen in the *pleura costalis*, but all indications of the others were gone. The *pleura costalis* was in these places quite healthy, and there was not the slightest effusion of lymph or attachment at the site of the punctures; but at a little distance, say twelve inches from them, there was a patch or two of thickening of the membrane.

It is in cases where we have fetid breath as one of the symptoms that there is the greatest danger; and I believe that when only a very small portion of the parenchymatous structure of the lungs is in a disorganized state we must have, as an absolute necessity, fetid breath. If pleurisy exists at the same time, the difficulty of cure is very great indeed; but so long as the breath keeps sweet, although we may have pleurisy, with a greatly accelerated breathing and pulse, and even effusion, there is a reasonable chance of recovery if the system has not been too much reduced by depletions, severe counter-irritants, and restricted diet.

CASE OF DISEASED HEART.

By J. D. Barford, M.R.C.V.S., Southampton.

Seeing a case in the *Veterinarian* for March of diseased heart, with remarks thereon by Assistant-Professor Varnell, I have thought a rough sketch of a somewhat similar case, which has just terminated fatally under my care, would not prove altogether uninteresting.

My patient was a brown harness-horse, about 15½ hands high, the property of a dealer in this town. He was purchased by him last September, and seemed to thrive very well up to about Christmas. At this time an eruption appeared on the skin, accompanied with considerable irritation, for which, I believe, two doses of aperient medicine were given. Some blood was also taken away, it being considered that the affection was mainly due to his improved condition—the owner being a liberal feeder. In addition to

this treatment, his owner procured at a druggist's an application for the skin, the principal ingredients of which were, as I am informed, corrosive sublimate and powdered white hellebore, with sulphur and some other matters. The proportions of corrosive sublimate and hellebore were about two ounces of the former to six drachms of the latter for making two and a half pounds of ointment. With this the horse was dressed twice, at intervals of about three weeks, and I should think that about three quarters of a pound of the ointment were used altogether. During this time his health did not seem to be interfered with to any perceptible extent, as he fed well and the excretions were natural.

In the course of about two or three weeks after the last dressing he faltered in his feeding, and a slight œdematous swelling appeared in the legs, under the abdomen, and about the sheath. A relaxed state of bowels also showed itself. These symptoms caused my attention to be drawn to him; and which, on reference to my case book, I find was on the 12th of February.

Considering that the bowels required relieving of some offending matter, I first administered a slight laxative, and afterwards employed tonic agents combined with diuretics. It is needless to particularise the exact course of treatment which was pursued from day to day or the variations in the symptoms; suffice to say, that some days the evacuations were tolerably healthy, and at others they were in the opposite condition. Despite, also, all our endeavours, the swelling gradually increased, until it became continuous and of a great size from the sternum to the scrotum. The appetite also became more and more impaired, and on the morning of the 8th of March, on being brought round to have some medicine administered, he fell and died without a struggle. The pulse, which was feeble, had ranged all the time from about 45 to 60 in the minute; and although I saw him about two hours before his death, I could not detect any marked change for the worse. The pulse was then beating both at the jaw and the heart quite as strong as on the previous day. Indeed, there was not sufficient change in any of the symptoms to warrant one in apprehending such a speedy dissolution.

Post-mortem examination, twenty hours after death.—The whole of the subcutaneous cellular tissue was found to be gorged with serous fluid, as were also the thoracic and abdominal cavities, and likewise the pericardial sac. The liver and kidneys were softened in their structure. The intestines and the lungs were healthy. The heart was the chief organ affected,

it was much enlarged; its walls were thickened, but pale in appearance. The auricles and ventricles seemed, however, to be of their natural capacity.

Query.—Had the application to the skin anything to do in hastening on the animal's death?

REMARKABLE INSTANCE OF A COMMINUTED FRACTURE OF THE UPPER PASTERN BONES OF BOTH FORE LEGS OF A MARE.

By Geo. Wentworth, M.R.C.V.S., Great Grimsby.

I forward for your inspection the lower portion of both fore legs of a mare which met with a singular accident a few days ago.

The subject of this remarakble case was a well-bred mare, six years old, the property of Marmaduke Clark, Esq., of Little Coates. The groom, being sent on an errand about twelve miles from home, rode this mare; and after proceeding about ten miles on his journey, and when trotting by the side of the road, she suddenly became very lame of the near fore leg. The groom, thinking she had picked up either a nail or a stone, examined her foot; but not finding any of the kind, he rode slowly on, and after proceeding another mile or so the mare improved in her going, and walked nearly sound. Arriving at the place, she was put into a stable, and after waiting an hour he commenced his journey home. He rode her slowly for about three miles, when the lameness so much increased that he called at a village, and got a blacksmith to examine her foot, but as the smith did not find any cause for the lameness, the groom took the mare about three miles further on, when he heard a sudden snap, and immediately the inferior portion of the metacarpal bone of the near fore leg was protruded through the skin. This occurred about a hundred yards from a farm-yard, whither he went for assistance, and returning to the mare, he was astonished to find the metacarpal bone of the *off* fore leg was also protruding through the skin; in fact, the mare was standing on the ends of the metacarpals, both pastern bones being fractured. The mare was destroyed immediately.

I have not interfered with the position of the parts, but it will be seen by you that the large pastern bones of *both fore legs* are fractured into a great number of pieces. In all probability, a fracture, without displacement, took place in the *near*

fore leg when the groom first perceived the lameness. If so, it is very singular that the mare could travel such a distance (upwards of eight miles) without causing displacement of the broken bone. The accident to the *off* leg would seem to have been caused by the efforts of the mare to move with one broken limb.

[On examination, the parts showed, not only a comminuted fracture of both the large pastern bones, but an extraordinary laceration of the ligaments and integumental covering of the pastern joints. Greater injury could scarcely have been done had the animal been forcibly struck down, and a heavy weight made to pass over the limbs. Seeing this, we wrote to Mr. Wentworth for further particulars, and requested that he would interrogate the groom particularly as to the time of the occurrence of the *second* described fracture. To our inquiries we received the subjoined communication:—]

Dear Sirs,—I have made further inquiries respecting the case of fractured pasterns. The description I gave in my last is, on the whole, correct.

The groom positively states that the mare "first fell lame of the near fore leg." She was then ridden upwards of two miles, and improved in her going. (You will find I did not state that her *lameness passed off*. The mare was put into a stable belonging to Mr. Clark's brother, whose servant led her out for the groom to mount, and made the remark, "Your mare is very lame." The groom then rode her about three miles, and as the lameness increased, he called at the farm-yard of W. Wright, Esq., of Wold Newton, and got a smith to examine her foot. (I ought to have stated in my last, that the man told me the shoe was *not taken off*.) The foot was hammered and pinched by the smith in the presence of Mr. Wright and his servant (the latter is a very experienced man among horses); and although the foot was taken up several times, they could not detect any positive cause for the lameness. They did not perceive any unnatural heat or swelling, but thought the mare was tender about the fetlock-joint, and concluded that this was the seat of lameness.

After the examination of the foot the mare was very lame, and the groom commenced leading her, but shortly afterwards mounted. He was overtaken by a neighbouring farmer, who, after riding a little distance with him, made the remark, "the further your mare goes the lamer she gets." The lameness increasing, the groom again commenced leading the mare; and

as he had to pass through two villages, several people noticed that the mare was very lame.

The man assures me that when he left the mare in the road to get assistance she was sound of the *off* leg, and that when he returned it was broken in a similar way to the near one. He was trotting by the side of the road when he first perceived the lameness.

There must have been some injury to the pastern bone of the near fore leg when the man first noticed the mare lame, but to what extent I am unable to say. It may be a very remarkable circumstance, but I can readily believe it possible for the mare to fracture the off fore leg in her efforts to move on an uneven road with one fractured limb.

Perhaps you would deem it right, in a case so singular as this, to have an analysis of the bone made by Professor Tuson, who, I understand, has succeeded Professor Morton as the Teacher of Chemistry and Veterinary Materia Medica, and who, as I am also informed, undertakes general analyses in the laboratory of the College.

Report on the Analysis of the Fractured Pastern Bones.

By R. V. Tuson.

The following numbers represent the relative per-centage quantities of organic and inorganic constituents contained in the fractured pastern bones, and the average composition of healthy bone of the horse:

	Fractured pastern bone. (Tuson.)	*Healthy bone of the horse.* (Von Bibra.)
Organic matter (gelatine, &c.) . .	39·59	31·96
Inorganic matter (phosphate of lime, carbonate of lime, &c.) . . .	60·41	68·04
	100·	100·

By comparing these two analyses it will be seen that the fractured bone contains rather more than seven and a half per cent. less inorganic or earthy matter than, according to Von Bibra, healthy bone of the horse does. This circumstance, I believe, may possibly account for the fracture, as a diminution of earthy matter in bone is often productive of a diminution of strength.

THE ANOMALOUS POSITION OF THE INDIAN ARMY VETERINARY SURGEONS.

India; *March*, 1861.

Gentlemen,—You are probably not aware of the extent to which the existence of veterinary surgeons in the army in India is ignored by combatant officers, and their opinion and assistance dispensed with under circumstances which, in England, would render their presence and advice absolutely necessary. As an instance of this allow me to give you the following.

A few months ago a troop of horse artillery and a light field battery were out at exercise together, and while executing some manœuvre a horse of the latter got injured in the off hind leg. The farrier-sergeant reported that the leg was broken *in two places,* and a committee was assembled on the spot, and the horse destroyed on the strength of the sergeant's statement. A short time after this I arrived on the ground as a spectator, and on the president of the recent committee seeing me he came up and requested that I would go and "look at a battery horse which was supposed to have broken its leg." I therefore went to the spot pointed out (he returning to his troop), and on my arrival, found much to my surprise, a dead horse instead of, as I expected, a living one. The farrier-sergeant was there, and pointed out to me the situation of the "*two fractures;*" but on examining the limb I could not detect any lesion of the kind. This opinion I communicated to him, and subsequently I reported it to the president, and sent to the sergeant, directing him to bring the bones for my inspection. His answer, however, was that the carcass had been demolished and the limbs taken away by the numerous wild dogs and hungry pigs which are always wandering about the plains, and thus this matter was allowed to drop. I have no doubt, however, that the man dissected the leg, and finding he had made a mistake, threw away the bones, and told an untruth.

I was not in professional charge of the battery, although it was in our lines, and I had, therefore, no direct authority over the sergeant. Is it not strange that a troop of horse artillery and a field battery of the same regiment should be stationed at the same place together, and that the veterinary surgeon of the former has, under such circumstances, nothing to do with the horses of the latter? We sadly want a principal veterinary surgeon out here, and I doubt not we shall

soon have one, now that it is decided that amalgamation shall at once take place, and then I trust this anomalous state of things will be got rid of.

I am, &c.,

AN INDIAN ARMY VETERINARY SURGEON.

To the Editors of 'The Veterinarian.'

APPOINTMENTS OF VETERINARY SURGEONS TO THE INDIAN ARMY.

ENGLAND; *May* 10, 1861.

DEAR SIRS,—In reply to the correspondent in your last publication signing himself "*A Subscriber*," I beg to inform him that the Indian Army does not stand alone in the *non*-working of the Royal Warrant of 1st July, 1859. In Her Majesty's Royal Artillery there is not a single veterinary surgeon out of the twenty-eight who can personally appreciate the honorary distinction set forth in the *long-coveted* warrant, although I find one member having over eleven years' service.

The cavalry have even more to complain of, as I see by the 'Army List' there are six veterinary surgeons in their sixth year, three in their seventh, three in their eighth, one in his ninth, and three in their thirteenth years' service.

There is evidently something radically wrong in the working of this fancied boon. If the army members of the profession are not equal to the requirements of the warrant and the service, shunt them by all means, and let both the dignity of the profession and the warrant be upheld by suppyling men who are. At present the impression is strongly in favour of attributing allurement to the uninitiated in army mysteries, or, in other words, that it is akin to a myth.

The subject is a delicate one for army men to touch upon, fearing, as a consequence, the booming of the Armstrong ordnance at Woolwich, and this may probably give rise to the apparent apathy which exists; but now that it has been raised, I trust that it will not drop till justice is done to the profession, and the self-respect of army members upheld.

As regards the latter part of your correspondent's letter, the wording of the warrant is very plain upon the point. "Veterinary surgeons, on appointment, rank as subalterns." Now, cornets, ensigns, and lieutenants are subaltern officers;

consequently, a veterinary surgeon ranks according to the date of his commission, provided such appointment was originally to that regiment or battery; but in case of an exchange, from the date of such transfer. The steps of the ladder have then again to be ascended. This is one of the great stumbling blocks of the warrant, and is and must continue to be particularly felt in the artillery.

I am, very truly yours,

"VIGIL."

To the Editors of the 'Veterinarian.'

THE INDIAN ARMY.—THE WRONG MEN IN THE WRONG PLACE.

By "A SUBSCRIBER."

IN looking over the 'Army List' the other day I was struck by the following rather anomalous state of things, and as it may be a piece of news both to you and your readers, I send it for insertion in the *Veterinarian*, should you deem the subject of sufficient interest.

In the stud department of Bengal there are thirteen appointments held by military officers, viz., one superintendent, two deputy superintendents, two first-class assistants, two second-class ditto, and six sub-assistants.

The whole of these officers belong to native INFANTRY, and there is not, at present, a single officer of either *cavalry* or *artillery* in the department. Is this not a strange arrangement? Can you imagine officers of the infantry in England being appointed to breed and purchase horses for artillery and cavalry?

There are three assistant-surgeons and four veterinary surgeons in the stud department, but their duties are strictly professional.

Facts and Observations.

FATAL CASE OF GLANDERS.

GUY'S HOSPITAL.

Under the care of Mr. BIRKETT and Mr. BRYANT.

SIDNEY W. M—, æt. 23, a horse-slaughterer, residing at Plumstead, was admitted into Guy's Hospital, on March 13th, 1861, under the care of Mr. Birkett. He had always had good health, but had lived freely. Six days previous to his admission he cut his right hand deeply over the dorsal aspect of the thumb. The wound bled freely; but he felt no inconvenience from it of any consequence until the 10th. He then had pain in the part, extending upwards to the axilla, and also a numbing pain in the calf of the right leg. His appetite was, however, good, and he had so little constitutional disturbance that he went as usual to superintend the work, which the accident had prevented his carrying out. On the 11th the pain in the arm increased, and that in the leg on the 12th extended upwards to the thigh. This had become considerably aggravated, and he then became generally indisposed and was unable to stand. The following day he applied for admission.

He stated that he was extremely ill, and that his limbs felt almost paralysed; he was quite unable to stand. He had constant rigors, a burning skin, white tongue, and his pulse was 120. The wound in the hand was inflamed, and the calf of the right leg and the thigh were swollen, and evidently the seats of abscesses. These were freely opened with relief. He was ordered effervescing medicine, and two pints of porter. The case was then regarded as one of pyæmia.

On the 14th he was much relieved. He had slept tolerably. The abscesses discharged freely, and he was able to take his food.

15th.—He was seized with vomiting, bringing up a dark, bilious fluid. His powers were less Wine was given freely.

On the 16th the vomiting continued, and he complained of pain in the left thigh. An abscess was discovered on examination, which was freely opened. The man at this time was physically in a very low condition. He took brandy, eggs, and other liquid nourishment with avidity. His manner was peculiar and somewhat excited.

On the 17th another abscess was opened in the left arm. On the 18th the left foot became the seat of an abscess, and on the 19th, for the first time, a pustular eruption was observed on the face and body, which suggested to Mr. Bryant the probability that some animal poison was the cause of all this mischief.

The eruption was peculiar, having no definite shape. It appeared to be more like small, irregular blebs, containing pus, varying from the size of a pea to a sixpence. Some were round, others oval, and others of an irregular form. Towards evening his breathing also became much impaired, a bloody mucus obstructing the nostrils. Towards night he became delirious, his powers became less, the nasal discharge more profuse, and at 1·30 on the 20th he died. The eruption some hours before his death in parts had disappeared; but in others a fresh crop sprang up, particularly over the region of the sternum; these were, however, of the same character, but smaller.

No post-mortem examination was made.—*Medical Times and Gazette.*

BITES OF POISONOUS SNAKES.

The Parisian correspondent of the *Lancet* says:—"A scientific amateur, M. de la Gironnière, has addressed from Manilla a letter to the Institute of France, in which he details some curious particulars relative to the treatment of poisonous snake-bites. This communication mentions that in the virgin forests of Calanang there exist several varieties of highly venomous serpents, the bites of which are invariably fatal. 'A short time back,' says this gentleman, 'one of my workpeople was bitten in the finger by a reptile of the species accounted by the Indians the most dangerous of all, the serpent in question being from eleven to twelve inches long, of a yellow colour, with a flat and triangular-shaped head, and possessed of fangs which measure three quarters of an inch in length. The actual cautery was immediately applied to the wound, but without success, as the pain, swelling of the limb, and other symptoms, indicating absorption of the poison, progressed in intensity.' In despair, M. de la Gironnière ordered a bottle of cocoa-nut wine, a beverage almost equal in strength to ordinary French brandy, to be poured down the throat of the doomed sufferer. The first dose produced intoxication, and the local symptoms abated, to reappear, however, as the effects of the alcoholic stimulus

subsided. A second bottle was administered, with still more permanent benefit; and a third decided the cure, which was definite, the results of the cauterization being the only evidence of the accident which had occurred."

A writer in the *American Journal of Medical Science,* alluding to the bites of venomous snakes, remarks that "the *Euphorbia prostata* is said to be an antidote to the poison of the rattlesnake. Its virtues reside in the juice of the stem, root, and leaves, extracted by bruising and diluted with water. Dr. Irwin, U.S.A., has experimented to a considerable extent upon animals, and considers it an invaluable specific."

USE OF GLYCERINE IN THE INTERNAL EMPLOYMENT OF CHLOROFORM.

M. Bonnet, a pharmacien to one of the Paris hospitals, gives an account of the various means he has tried of remedying the inconveniences which attend the ordinary mode of prescribing chloroform for internal use; seeing that, in consequence of its insolubility in ordinary vehicles, it is administered equably only with difficulty. He finds that mixing equal parts of chloroform and the finest glycerine in a mortar, until the droplets of chloroform cease to be visible, completely answers the end. When water or other adjuvant is added, a limpid fluid is produced, which exhibits no sign of separation, even when more than 100 parts by weight of the chloroform are added to distilled water. It is essential for this that the glycerine shall be perfectly pure. Sulphuric ether may be administered in the same way. For external application chloroform should be similarly combined, a larger proportion being caused to be taken up by more rubbing. This preparation of the chloroform prevents the painful irritation which sometimes ensues on its application.—*Medical Times and Gazette.*

NEW ALKALOID OF OPIUM.

Dr. Wittstein claims to have discovered a new alkaloid in opium, which he has named metarmorphia. This makes the ninth alkaloid obtained from that drug.—*American Medical Times.*

ANISEED MIXED WITH HEMLOCK.

These two plants being allowed to grow wild together in the Romagna, great carelessness appears to have been manifested in collecting the seeds thereof, and the consequence is that several cases of poisoning have occurred; the quantity, in some instances, it is stated, of the hemlock being equal to one third of the weight. The French Government have therefore directed the merchants receiving consignments of it carefully to examine them.

THE FLESH OF THE HIPPOPOTAMUS AND THE GIRAFFE AS ARTICLES OF FOOD.

In an interesting letter from Dr. Livingstone to Sir R. Murchison, which was recently laid before the members of the Geographical Society, the doctor, after giving a graphic description of his further explorations of the *Zambesi*, &c., says that he found the hippopotami had eaten all his trees, so that henceforth, he adds, "we shall have war with them to the knife. They are good food, half beef and half pork, and lots of fat, that serves as butter. This is part of the 'casus belli.' By the way, our good friend, Professor Owen, and the gastronomic committee, will stand very much in their own light if the giraffes die a natural death. If they praised the eland so, which we consider but so-so, a dinner off the giraffe will leave them all lying on their backs."

BELGIAN HORSES.

The Society for Improving the Breed of horses and Developing Horseracing in Belgium has just been reconstituted at Brussels, and the Duke de Brabant and Count de Flandre have taken it under their patronage. The Duke d'Arenberg has been elected president; and M. Fontaines, burgomaster of Brussels, and Count F. d'Yve de Bavay, vice-presidents.—*Times.*

THE VETERINARIAN, JUNE 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —CICERO.

ANNUAL MEETING OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

THE past month has been one of activity in matters relating to the best interests of our profession.

During this period many new members have been added to our lists, by having passed the ordeal of their final examination; and besides this, the profession has assembled, in accordance with the provisions of the Charter, to learn something of the proceedings of its representative Council, and to elect office-bearers in the place of those retiring by rotation. We give the names of the new members of Council in the subjoined report of the annual meeting, which may perhaps be described as being a full average one, while the business transacted partook only of the ordinary routine character.

Under existing circumstances, we refrain from making any very pointed remarks on the want of interest shown by the members of the profession in the working of its Charter. We trace this apathy to many causes, among which must certainly be named the existence among us of a spirit of dissension, kept alive by the unfortunate state of things still carried out in Scotland. We, however, yet cherish the hope that the day is fast approaching when such adverse proceedings to the best interests of the body corporate will cease to be, and when, as branches united to a parent stem, we shall all appear compact, well growing and flourishing together.

Another cause of the apathy which belongs to these annual meetings we must only lightly touch upon. Sympathy for the feelings of others forbid that we should do otherwise. We allude to the so-called "Abstract of the Proceedings of the Council." As it was heretofore, so it is now. Its poverty is wretched. It is a thing of shreds and patches, not only conveying no information, but unintelligible in many of its statements, and tending to diminish rather than excite in-

terest in the doings of the Council. It gains no new strength nor vigour as it goes, but we must not now speak out all we think, as we have been accustomed to do on a subject of this kind. Let us rather hope that in this also we are approaching a better order of things—one more worthy of a legalised profession.

We attach hereto a full report of the annual meeting, that our readers may be in possession of all that took place. Since then the newly constituted Council has met and elected for its President, Mr. F. R. Silvester, *St. Alban's*, and for its Vice-Presidents, Messrs. W. Aitkin, *Kilmarnock*, Coleman Dray, *Leeds*, M. J. Harpley, *Royal Horse Guards Blue*, W. Joseph Goodwin, *Hampton Court*, J. Gamgee, *Edinburgh*, and James Kerr, *London*.

Our country friends will see by this act that they take their full share of the honours which belong to us as a profession. This is as it should be. We have in the new President, *l'homme nécessaire*.

REPORT.

The seventeenth annual meeting of the Royal College of Veterinary Surgeons took place on the 6th ult., at the College, No. 10, Red Lion Square. Owing to the absence, from illness, of the President, J. Wilkinson, Esq., the chair was occupied by Professor Spooner. The following members were presented:—Messrs. H. Batt, Edw. Braby, T. D. Broad, Jas. Broad, Wm. Burley, E. Charles, Wm. Cheesman, John Jas. Cheesman, J. M. Clayworth, J. Coleman, F. F. Collins, Robt. Cook, R. W. Cowell, W. F. Cross, Chas. Dickens, Wm. Ernes, S. F. Fallding, Wm. Field, jun., E. N. Gabriel, Professor J. Gamgee, R. Gates, Thos. Greaves, C. W. Gregory, Jas. Hall, M. J. Harpley, W. Helmore, John B. Henderson, R. L. Hunt, T. Jex, Alfred Large, H. Lepper, Clement Lowe, Wm. Mavor, J. McDermott, Jas. Moon, W. Pritchard, W. Robinson, R. Leal Shaw, F. R. Silvester, Professor Simonds, Edw. Stanley, W. J. Stanley, George Tegg, Walker Watson, G. B. Webb, Wm. Wilson, S. H. Withers, Joseph Woodger, J. Woodger, jun., Edw. Woodger, and F. W. Wragg.

The Chairman, in opening the proceedings, after expressing his regret at the absence of the President, said the object of the meeting was to fill up six vacancies in the Council. Six gentlemen, as required by the Charter, retired by rotation,

but they were eligible for re-election. He (the chairman) had intended to make some observations on the Charter, but, occupying the position he now did, it would not be right to detain the meeting by any remarks on the subject at that time.

Mr. Gabriel, the Secretary, then read the advertisement convening the meeting; the minutes of the last meeting, which were duly confirmed; and the following "Abstract of proceedings" for the past year:

Abstract of the Proceedings of the Council of the Royal College of Veterinary Surgeons, during the Year 1860-61.

The proceedings of the Council during the past year have proved more satisfactory than on any former occasion; a more kindly feeling, a greater approach to unity in connection with the schools and the corporate body exists, and a stronger hope of a lasting and permanent amalgamation at last shines in the horizon.

The gloom of death has, unfortunately, fallen heavily on the members of the profession during the past year. Among others, is the loss of Bracy Clark, Member of the Institute of France, and Fellow of the Linnean Society. His works at one time were universally read, and are still highly approved; and, although he indulged in some peculiar professional theories as to the functions of the feet and the principles of shoeing, he at last quietly joined in the opinion of the late Mr. James Turner, that the unilateral or one-sided nooking of the shoe was the nearest approach to the doctrines he had disseminated.

Deaths from glanders, almost fearful to think of—deaths from falls from horses, or being thrown from various vehicles, have formed a fearful addition to the ordinary rate of mortality amongst us. The number of deaths during the past year has been twenty, and, during the same period, forty-three members have been admitted; making the number which has passed since the obtainment of the Charter, 717.

During the year communications have been received from the Foreign Office, that a number of documents had been received from the Saxon Government for the information of the Royal College of Veterinary Surgeons. These documents were received with thanks, and it was also stated that the Council would communicate with the authorities of the veterinary schools, and would not fail, in due time, to for-

ward any similar communication they may receive, to be forwarded to the Saxon Government. Information has also been received by the Council, that endeavours are about to be made to establish a veterinary school in Dublin. The financial report is as favorable as may be expected from the at present reduced fee. The balance in hand, after defraying the expenses of the year, is £409 3*s*. 8*d*.

The death of Mr. James Turner occasioned a vacancy in the English Board of Examiners, which has been filled by the election of Mr. W. Mavor, jun. The Scotch portion of the Board has been entirely reorganized; it now contains the names of some of the best men in the north.

Our worthy and respected President, J. Wilkinson, Esq., has done everything in his power to advance the interests of the profession; and, at the last general meeting, he gave a premonitory notice, that applications be made to the authorities of the schools, that the pupils, before being admitted thereto, should receive a preliminary examination —an idea which we doubt not will be unanimously responded to by every member of the profession.

It is to be hoped, therefore, that the time is fast approaching that the Royal College of Veterinary Surgeons—in full reliance on the talented professors of our schools—may become a united and a stable body.

E. N. G.

[Subjoined is a copy of the yearly balance sheet, by which it will be observed that an increased amount is in the banker's hands.]

E. BRABY, Treasurer, *in Account with the Council of the Royal College of Veterinary Surgeons,* April, 1861.

Dr.		£	s.	d.	Cr.		£	s.	d.
April 8.	Balance at Bankers'	335	13	2	April 8.	Examining Fees and Expenses	97	13	6
	Pupils' Fees	416	17	0		Rent	60	0	0
	Interest	3	11	8		Rates and Taxes	28	10	6
	Registrar	1	7	0		Allowance to Secretary	100	0	0
						Advertisements	8	18	4
						Printing	8	15	0
						Insurances	4	14	3
						Coals, Gas, and Wood	10	7	0
						Stationery and Envelopes	6	6	6
						Petty House Expenses	23	0	1
						Balance at Bankers', April, 1861	409	3	8
		£757	8	10			£757	8	10

We have examined the above, and found it correct.

M. J. Harpley,
G. Tegg, Jun. } *Auditors.*

On the motion of *Mr. Mavor* seconded by *Mr. Cox* the report was received.

Mr. Helmore then moved, and *Mr. Broad* seconded, the adoption of the report.

Mr. Ernes said, the report stated that everything during the past year had passed off satisfactorily. The question, however, was, had they made any progress towards obtaining the object for which the charter was granted? The charter was obtained to secure certain exemptions to the members of the profession. The present was the seventeenth meeting, but he could not see that they were any nearer the attainment of their object than when they first assembled. Great expectations were then entertained by the members of the Council, but unfortunate secessions and dissensions had since taken place, which had prevented the adoption of vigorous and united measures. It was high time to turn their attention to the obtaining of some laws to protect the profession from empiricism. A committee was formed in 1840, which existed for four years. Its purpose was to get an Act of Parliament, but it was found that there was no incorporated body to whom such an act could be granted, and it was accordingly resolved to apply for a charter of incorporation. When that charter was obtained it ought to have been followed up by an Act of Parliament, but that object was not carried out. The medical profession had recently obtained powers by which they were sufficiently protected, and he thought the veterinary profession might obtain similar privileges. The very existence of the profession was at stake. They could never expect to make any progress until they checked empiricism, from which both town and country practitioners were suffering. In order to raise the profession, it was necessary to give it such a standing that men would be willing to spend their time and money for the purpose of securing an *avenir* that would repay them for their exertions. They were bound to protect, not only the profession, but the agricultural interest. Agriculturists could not distinguish between qualified and unqualified practitioners; they often went to the first man who called himself a veterinary surgeon or a cow-doctor, and the result was that their property was sacrificed, and the regularly qualified practitioner was injured. In many continental countries protective laws had been obtained. The French were endeavouring to get the same privileges. M. Leblanc, who was at the head of the movement, stated that, such had been the injurious effects of empiricism, that the profession had almost come to a stand-still. In 1813 it numbered from 1200 to 1500 members, and in 1861 the

number was only 3000. A similar state of things would prevail in England unless active measures were taken to prevent it. Young veterinary surgeons going into the country found the greatest difficulty in establishing a practice. He thought that a little pressure from without might induce the Council to use its utmost exertions in the coming year. Their finances were in a satisfactory condition, and the funds could not be better spent than in obtaining an act, if it was only one of registration.

Mr. Gamgee said he claimed credit for a certain degree of activity in bringing the Royal College of Veterinary Surgeons before the public, and they needed nothing more than that the world should be alive to the true nature of their institution. The position which the veterinary profession held as a body in this country was certainly unique. They were a single and a strong body, and thus unlike any other profession. He had insisted in the north very strongly that the Highland Society had no authority to grant certificates to persons as veterinary surgeons; so much so, that a leading agricultural paper had recently declared that that society could grant no diploma, and that Government ought to be memorialised to obtain another charter. That was a very dangerous position. He knew well the strength of the Scotch society, for he had often battled with the directors. The members at large, however, had rallied round him, and agreed that there should be perfect freedom in veterinary education. So strong was the society, that but for the general vote of the members he believed the new veterinary college would have been swamped. Since the college was legally authorised, they had striven by every means in their power to get the profession recognised, and they could only get strength by combining together. If they were weakened by division and secession, they would be trampled under foot, not only by empiricism, but by that adverse combined action which had occurred in Scotland. He had been informed by high legal authority that they needed no Act of Parliament to accomplish their object. There was a body of solicitors in the north who possessed a charter like their own, and they appointed officers to find out all persons styling themselves "solicitors" who had no right to the title. In this way the practice was effectually checked. It was true there was no penalty attached to the false assumption of the title of veterinary surgeon, but proceedings might easily be taken against offenders which would in many cases deter them. They must never expect thoroughly to overcome empiricism, and destroy the influence of some ignorant men

who believed they had a few specifics, some recipes handed down to them, and a very valuable book at home for the cure of glanders, and everything else. Such men would act without calling themselves veterinary surgeons. What was wanted was that veterinary surgeons should keep the title exclusively to themselves; that agricultural societies should not step in and grant useless and illegal certificates, by which the public were misled. He agreed with Mr. Ernes as to the necessity of registration. They must fight for that point, and they should appoint officers to institute proceedings against persons who poached on the grounds of professional men under false titles. A case recently occurred in the north, but was now in abeyance, in which a veterinary surgeon claimed damages for injury done to his practice by a person who had been successfully competing with him, and who had only the Highland Society's diploma. There would, however, be little chance of success in Scotland, where a judge and jury would only laugh at the idea of the Highland Society not having the power to grant certificates. The case would probably be revived, in order to have the legal point established. He believed damages could be recovered.

The Chairman said the highest law officers of the country had been consulted, and had given their opinion that no penalty attached to the improper assumption of the title of veterinary surgeon.

Mr. Gamgee said he was aware that there was no penalty, but legal men in the north were of opinion that there was a way of meeting the difficulty, by making out a case of special damage. At present they were rather weak in Edinburgh against the Agricultural Society, but he believed that by vigorous action they could accomplish their object. It was by hard work that they got their charter recognised in the north; it cost a great deal of labour and money, and brought upon them some amount of ill-will. They were now overcoming that feeling, and he believed in the course of three or four years every man in Scotland would be brought to the Royal College of Veterinary Surgeons. The students themselves were finding it out. Before, then, they went in search of new acts, they ought to remember that they had an act already by which a great deal might be accomplished. Some of the most active supporters of the new Veterinary College were on the Highland Society's board of directors, and no single individual could be expected successfully to oppose their application to Government.

The Chairman.—They were not met to consider the question

of the Highland Society, but the simple adoption of the report. Mr. Gamgee had been arguing that the existing charter was sufficient to enable them to obtain the privileges they desired, but he (the Chairman) agreed with Mr. Ernes in thinking that it was not, and that they were now in a position to ask the Government for privileges which the charter did not grant.

Mr. Gamgee thought the members should carefully study the present charter before endangering their position.

Mr. Helmore said he was glad to find that Mr. Ernes had his eyes open to the requirements of the profession; and since he had a seat at the board, he would, no doubt, do his best to see that they were met.

The Chairman.—Before putting the question of the adoption of the report, I think it right to make one or two observations. On looking at the charter, which I hold in my hand, I find amongst the names of the petitioners that of Professor Dick. It is, I believe, well known that long antecedent to the charter there were two veterinary schools, one in London and the other in Edinburgh. The latter may be said to have arisen out of the former; and further on in the charter, where it sets forth the benefits which have been derived from the existing institutions to the public, it especially dwells upon the advantages that have issued from the Royal Veterinary College in London; but it was deemed advisable, inasmuch as Mr. Dick's school had been recognised by the Highland Agricultural Society, that the provisions of the charter should extend to Scotland, embracing his school as well as that of England. There is also a clause in the charter to the effect that any school which might subsequently receive the Queen's sign-manual to teach should be embodied with the two existing schools. Now, long subsequently to the obtainment of the charter—indeed, only recently—Mr. Gamgee applied to Government, and obtained the Queen's sign-manual; so that there are now three schools empowered to teach the veterinary pupil, and send him to the corporate body for examination for the diploma of the Royal College of Veterinary Surgeons. At an early period, however, after the charter was obtained a misunderstanding arose between the members of the Council who were first appointed. It has been stated to you that a committee was early formed with a view of obtaining a charter. Such is the case. I and my then colleague, Mr. Morton, were not members of that committee; but my present colleague, Professor Simonds, was a member. The committee continued to sit for some years, bnt did not succeed. They did not succeed simply because the profes-

sors of the Royal College of Veterinary Surgeons were opposed to the obtainment of the charter. I mean the late Professor Coleman and Professor Sewell. Mr. Morton and myself, although connected with the institution at that time, were sub-officers, and could not well act when our senior colleagues were opposed to the application for a charter. After Mr. Coleman's death I held a more prominent position in connection with the College, and was enabled to induce the late Professor Sewell to join me in signing a petition for a charter; Professor Simonds and Professor Dick also attached their signatures. There was then no difficulty about the matter, and the charter was at once granted. I have said that a good deal of dissension took place, and I will tell you the cause. After we had signed the petition no meeting of this provisional committee was ever convened, and the matter was left entirely in the hands of the late Mr. Thomas Turner, Mr. Mayer, and Mr. James Turner—the chairman, the secretary, and the chairman's brother—who never consulted the other members. When the committee learned, to their surprise, that the charter was granted, they looked into the various clauses, some of which they found to be very objectionable. This led to a great deal of dispute, in consequence of which, and the examining fee being too high in the opinion of Professor Dick, that gentleman seceded from his connection with the corporate body. He reverted to his original position, and placed himself under the protection of the Highland and Agricultural Society, and he has continued in that position up to the present time. Now that, I say, is very much to be lamented. It is the duty, in my opinion, of the members of the corporate body to induce Professor Dick to come round to us, and send his pupils to the Royal College of Veterinary Surgeons for examination, so that they may become members of the corporation. But the great question is, how is this to be done? Unfortunately, in my opinion, for years past we have been adopting wrong measures. We have been endeavouring to effect this purpose by violent means, from which, depend upon it, good results seldom proceed. The proper way would be to appoint a deputation from this body to wait upon the Highland and Agricultural Society, and fully explain to them the nature of the charter. There can be no doubt that the issuing of certificates by that society, an apparently official and authorised body, tends more than anything else to oppose the progress of the corporation. With regard to empiricism, as Mr. Gamgee has remarked, whatever restrictions we may place upon individuals, the evil will exist to a greater or less extent; but it would be highly

important if we could get a clause attaching a penalty to the false assumption of the title of veterinary surgeon. At present, I am sorry to say, upon the highest legal authority, we have no such penalty, nor have we anything in the charter which exempts us from parochial and other duties, from which it would be very desirable that we should be relieved. Not only would it be an actual relief, but the fact of the public knowing that we were recognised, and that the Government had thought fit to relieve us from those duties, would in itself be a circumstance tending to our exaltation. These objects are most important for us to attain, and I could only wish that our annual report contained statements showing their necessity. I hope the time will shortly come when the Council will energetically exert themselves to obtain them. The first point to determine is, what are the privileges we possess, what others do we want, and how can they best be obtained? My own impression is that our charter is a most important document, arising from the causes I have mentioned, and that our best course would be to call a general meeting to determine to give up the existing charter, and apply for a new one. Such a new charter would undoubtedly be readily obtained, and we might embody in the clauses those conditions which would render it of great value in the estimation of the profession at large.

Mr. Gamgee asked if the chairman was aware of any memorial having been sent to the north on the subject of Professor Dick's students being sent to the Royal College of Veterinary Surgeons?

The Chairman said he was not.

Mr. Ernes said the charter cost £700 or £800, and he thought an Act of Parliament would be sufficient, since all imperfections could be corrected by bye-laws which they could pass.

The Chairman said very strenuous efforts were made a few years ago to obtain an Act of Parliament, but when it was brought before the house it was pooh-poohed, and did not succeed. When a body resigned its charter, and only asked for a new one, with certain additional clauses, the expense would not be more than half the original cost. If, however, the objects could be secured, £500 or £600 would be admirably spent in obtaining them.

The motion for the adoption of the report was then carried.

A ballot was then taken for six members of the Council, Mr. Jex and Mr. Collins being appointed scrutineers.

The following gentlemen were proposed:

Mr. Wm. Mavor, by Mr. Robinson.
„ Wm. Ernes, by Professor Simonds.
„ W. Burley, by Mr. Jex.
„ W. Helmore, by Mr. Withers.
„ E. N. Gabriel, by Professor Simonds.
„ J. Gamgee, by Mr. Broad.
„ J. T. Harpley, by Mr. Gabriel.
„ S. H. Withers, by Mr. Dickens.
„ T. D. Broad, by Mr. Woodger.
„ J. R. Cox, by Mr. Silvester.
„ W. Cheeseman, by Mr. Mavor.
„ Joseph Clayworth, by Mr. Silvester.

The scrutineers reported that the voting was as follows: Mr. Burley, 46; Mr. Ernes, 44; Mr. Mavor, 43; Mr. Gabriel, 42; Mr. Withers, 34; Mr. Broad, 28; Mr. Gamgee, 24; Mr. Harpley, 22; Mr. Clayworth, 11; Mr. Cheeseman, 9; Mr. Cox, 8; Mr. Helmore, 4.

The Chairman announced that the election had fallen upon Messrs. Burley, Ernes, Mavor, Gabriel, Withers, and Broad.

On the motion of *Mr. Robinson*, seconded by *Mr. Dickens*, a vote of thanks was unanimously accorded to the chairman.

The Chairman having replied, the proceedings terminated.

METROPOLITAN MEETING OF THE ROYAL AGRICULTURAL SOCIETY.

We extract the following from the *Mark Lane Express*.

"Our readers will learn with real satisfaction, that his Royal Highness the Prince Consort has consented to act as President of the Royal Agricultural Society for next year, when the Great Show will be held in the Regent's Park. The election will be most likely announced at the general meeting of the society on Wednesday, the 22d inst. This is on either side no empty compliment, but a really auspicious omen for agriculture. The advance of the art well merits such countenance, and the Prince's own tastes point at once to him as the proper patron of such an occasion as the Show of 'sixty-two promises to become. The world already knows of his Royal Highness' success as an exhibitor of stock; but it is not every one who has had the delightful privilege of inspecting the Park Home-

steads at Windsor, or of seeing and hearing how thorough an interest both her Majesty and her Consort take in the different phases of the Home, the Norfolk, and the Flemish Farms. With an enlightened and enlarged mind well fitted to his position, the Prince gives everything in any way worthy of his attention a fair trial. We see this alike in the breeds of stock he cultivates and the different descriptions of machinery he employs. There are those first favorites, the little Devons at one farm, the Herefords at another, and the Shorthorns at a third; with, moreover, an especial place for the dairy. The day on which we had the pleasure of going round, there was a new grass-cutter on trial; while one of Smith's steam-cultivators has been at work at Osborne, and another of Fowler's at Windsor. Both the Queen and the Prince make it their care to see such inventions well tested, and the Royal pair are equally zealous in marking the improvement of the animals. The Prince is known to be a capital judge, and there is not a beast but that he has the history and value of at his command. With, then, his great abilities and natural predilections, we may repeat that his Royal Highness' acceptance of the President's chair should inaugurate a great year for agriculture. It will be the especial duty of the society to make this worthy of him. There is an *éclat* already attached to the meeting, that needs but careful cultivation to grow and thrive as time progresses."

The half-yearly report of the Royal Agricultural Society, read at the general meeting on the 22d ult., when referring to this subject, says:

"Her Majesty has been graciously pleased to grant a site of twenty-six acres in the Regent's Park for the purpose of holding an Exhibition of Stock and Implements in 1862. The council have made the necessary arrangements with the Office of Works, and trust that the number of distinguished agriculturists, British and Foreign, who will visit the International Exhibition will, by their presence in the show-yard, have an opportunity of witnessing the magnitude and success of our department of national industry."

Extracts from British and Foreign Journals.

ROYAL AGRICULTURAL SOCIETY.

LECTURE ON THE NATURE AND CAUSES OF THE DISEASE KNOWN AS ROT IN SHEEP.

By Professor J. B. Simonds.

(*Continued from p.* 283.)

I have said that the liver fluke passes through a series of metamorphoses, or what have been designated alternations of generations; and perhaps I may be allowed to explain the difference made by scientific men between the two. In alternations of generations we have an animal which produces its ova in the ordinary manner; the young, however, which come from the ova are dissimilar altogether from their parent, but are nevertheless capable of a new system of generation, and the creatures which they propagate as a second or a third step, pass back to the original form of the parent. Ordinary metamorphosis is a different thing. Take the case of a bed-flea, for example, that being the first that occurs to me. The animal produces ova; these ova produce larvæ; the generative system becomes developed, but the larva does not propagate. It attains its full size, and then becomes a chrysalis or pupa; subsequently the perfect flea is formed out of the chrysalis, and it is in that state only that the generative system reaches its highest order of development. There is no alternation of generation, in other words there is no generation from the larva or pupa. Now this is a part of the natural history of the fluke, which, although it has received the greatest amount of attention from investigators on the continent and in England for some time past, is still to a considerable extent shrouded in mystery.

We have satisfied ourselves, as I have before explained, that we have from out of fluke eggs living creatures exceedingly small, much smaller than the egg itself, and that these do not immediately develop into flukes, but go through a series of alternations of generations. Now what I am going to explain will only allow of an analogy with regard to the distoma. Before explaining it, however, let me say that we believe that each of the fluke eggs contains a number of moving, ciliated cells, which are more or less round in form, and that these are set at liberty and pass into water, for

example, when the operculum comes off from the egg; that they then become parasitic to some of the creatures which are met with in water, and that when so parasitic they have the capability of propagating themselves; that they subsequently pass through a series of changes, and again become, as I shall show you by analogy, parasitic a second time, when they change into the fluke-like form. So that, tracing the process all through, we may say that the egg sends forth a circular germ which is ciliated, and which has a rotatory motion in water: that in this condition it becomes parasitic probably to molluscs, small snails, and creatures of this description: that when it gets into the body of such animals, working its way in just below the skin by the cilia which it possesses, it undergoes a perfect change, becoming something like a chrysalis, in which condition it propagates itself: that the creatures immediately coming from it reach a certain order of development in the snail: that they then escape, swim about in water, and, after a certain time, again become encased, and again become parasitic to the snail, in order that they may reach their highest form of development. All this is explained in one of the diagrams here exhibited.

Putting aside the eggs as representatives of distomata, we go back to a peculiar organism, as an analogy, which is often met with in small water snails, slugs, and the like, imbedded underneath the common integument in different parts of the body. It has been called a cercaria-sac, so designated from the creature which issues from it possessing a tail, with which it swims about in water. In this sac we have vital germs—very small granular matter—lying beside a kind of intestinal canal, which are sent off as gemmæ or buds. We find this budding process goes on, and that a considerable number of these germs are ultimately set at liberty. Within the sac these develop into the true cercaria, and when they have arrived at a certain period of development they burst through the sac, and swim freely about in water. [The diagram represents the different degrees of development.] You first see the small germ, which comes off as a gemma or bud, becoming elongated in one part of its body. Subsequently this elongates into a tail-like appendage; other organs are then added, and in this condition the creature bursts through the sac, leaving others to come out of it which are produced in the same manner. It swims about in water with a long, floating tail, and as such it has been viewed as one of the infusoria. Subsequently it curls itself up, and, as a general rule, gets in the first instance upon slugs, entering the slimy matter which covers them, and imbedding itself in it. Then

it becomes encased in a kind of shell again, and lies just underneath the skin of the snail, and from this state it goes on developing within the snail until it forms a distoma. So that there is no doubt, whatever may be the origin of these cercaria, so far as they are parasitic to snails, we have traced the whole history of them. By analogy, we imagine that, as we have germs of a similar nature which become parasitic from the ova of the true liver fluke, that these pass through a series of similar changes, and that in this imbedded condition they either remain in the water attached to plants, or to smaller creatures inhabiting water, especially slugs and snails; and that when these pass into the stomach of the sheep they find their proper *habitat,* and develop into flukes. It is important to bear in mind that the last transformation takes place, not in the liver, nor in the biliary ducts, but in the stomach or intestines of the sheep. You will see presently what importance there is attaching to this fact, which has only very recently come to light.

Now, if we accept this description as an approximation to the truth with regard to the development of flukes, we shall find that it unravels the whole mystery with reference to rot. It shows at once why certain districts are dangerous. It explains the occurrence which has been recorded over and over again, that out of a hundred sheep, for example, ninety-nine having strayed over a common, and one having been accidentally prevented from doing so, that subsequently the ninety-nine have been attacked with rot, while the one that remained behind escaped. I have recently received a letter from a well-known agriculturist—Mr. Edward Umbers, of Wappenbury—in which he has been kind enough to give me the particulars of two cases of this kind.

Many years ago some sheep belonging to his father were found, subsequently to their purchase, to be affected with rot, and in tracing out the matter, it was found that the sheep had been left in what was called a dangerous part of the country for a short space of time while the man went into a public-house close by to get some refreshment. If you look at Mr. Youatt's work you will see numerous cases of this description. And what is the explanation of them? I have known the time when I have stood in the lecture-room of our own institution and combatted this view, and never could become a convert to it till I became more enlightened upon the natural history of these entozoa. I now believe that it is perfectly possible for sheep to be free from the cause of rot at this minute, and to receive it at the next; that is, if they are placed under circumstances where they can obtain these

entozoa in one of their forms, or in a particular stage of their development. Now, let us suppose we have the cercaria rolled up into a form like a chrysalis covered over by its shell; let us also suppose that, which is positively the fact, that hundreds of these creatures can be seen upon small molluscs, and many of them also loose in water—that they are adhering likewise to plants growing in damp situations; then a sheep has only to drink a mouthful of water to take in an infinite number of these creatures, and, taking them into the stomach, they there become developed into flukes. We have, therefore, very good ground for believing that rot can be very readily and rapidly received.

There are certain difficulties which people put before us with regard to this theory. They ask how it is that we get rot in certain seasons and not in others. Well, we show that whenever there is an excess of moisture—whenever, in fact, we have great rain-falls—certain pastures and places, which are perfectly free from the disease at other times, now become affected. This is easily enough explained. We have seen that the ova of these creatures come out in millions from one affected sheep; what, then, must be the number of them in hundreds of sheep so affected! Now, by direct experiment, I have proved that you may take the ova of flukes, and keep them upwards of a year before there is any change taking place in them. We know not, therefore, what is the duration of the life of the ova. It is just possible that they may remain, not only one year, but two or more, without undergoing any change—not, indeed, until placed under favorable circumstances to undergo that change. If, then, we look at the vast numbers in which these ova exist, and at their power of maintaining their vitality for a great length of time, we get rid of a considerable amount of difficulty. We find that when we have an excess of moisture, and with that an elevated temperature, the living germs, if I may so call them, that are now separated by the bursting of the operculum of the egg, are set at liberty and become parasitic to other creatures, passing through the series of transformations comparatively quickly, and being at length very easily received into the system of the sheep.

I have referred to an elevated temperature combined with excessive moisture; and what is the practical observation which is made with reference, for instance, to watery meadows? It is notorious that sheep placed upon water meadows receive the rot; but it is equally notorious that it is only at a certain period of the year that they will do so. You may, as

every practical man knows, put sheep with impunity upon water-meadows during the winter months, or in the early part of the spring; but if you water your meadows in the month of May, and then get a luxuriant herbage springing up afterwards, and put the sheep on this, you are almost certain to rot them. As you approach midsummer, the danger increases; and as you approach the winter, it decreases. This single circumstance shows that, when there is moisture and heat combined, the cause of rot is brought into operation. I have already spoken of the great losses that are now occurring amongst sheep from the disease.

When were the sheep first affected with rot that we are now losing? I answer, last midsummer and forwards towards the autumn. That is the time to which you have to look. The cause was received then; the development has been going on in the flukes since that time. They have now attained their full size, and they are producing mischief in anæmiating the sheep. When we talk about curing rot, we must rather talk about taking cognizance, if possible, of the early existence of the disease. Then is the time to bring into operation certain causes which will prevent the malady.

I have here, for the inspection of the members, some early developed flukes, the only young ones I have been able to meet with. I have had them by me seven or eight years. They were taken out of a young sheep—and it is an exceedingly interesting fact, because it bears out what I have said—in which there was not one large or fully developed fluke, and consequently there was not a single ovum to be met with in the biliary ducts. They are simply the youngest form of the fluke development from out of the infusorial creatures to which I have before referred, that have found their way into these ducts. They were sent me by an amateur pupil of the Veterinary College, from Redgrave, in Suffolk. They were taken by him, in September, 1853, from some lambs which had come on the farm six weeks before. It was a marshy farm, and the lambs were placed literally upon fen-land, as it is called.

Having explained, though not so much at length as I should wish to have done, what I believe to be the true explanation of this disease, I must pass on to make some more common-place observations with regard to the means which we have at our disposal for the first ascertaining of the existence of the malady, with a view of putting into requisition the means which will effect its cure or prevention.

(*To be continued.*)

FEEDING AND MANAGEMENT OF DAIRY COWS.

By Charles S. Flint,
Secretary of the Massachusetts State Board of Agriculture.

No branch of dairy farming can compare in importance with the management of cows. The highest success will depend very much upon it, whatever breed be selected, and whatever amount of care and attention be given to the points of the animals; for experience will show that very little milk comes out of the udder that is not first put into the stomach. It is poor economy, therefore, to attempt to keep too many cows for the amount of feed we have; for it will generally be found that one good cow, well bred and well fed, will yield as much as two ordinary cows kept in the ordinary way, while a saving is effected both in labour and room required, and in the risks on the capital invested. If the larger number on poorer feed is urged for the sake of the manure, which is the only ground on which it can be put, it is sufficient to remark that it is a very expensive way of making manure. It is not too much to say that a proper regard to profit and economy would require many an American farmer to sell off nearly half his cows, and to feed the whole of his hay and roots hitherto used into the remainder.

A certain German farmer was visited, one day, by some Swiss from over the border, who desired to buy of him all the milk of his cows for the purpose of making cheese. Not being able to agree upon the terms, he finally proposed to let them take the entire charge of his cows, and agreed to furnish feed amply sufficient, the Swiss assuming the whole care of feeding it out, and paying a fixed price by measure for all the milk. "I found myself at once," says he, "under the necessity of selling almost half my cows, because the Swiss required nearly double the quantity of fodder which the cows had previously had, and I was well satisfied that all the produce I could raise on my farm would be far from sufficient to feed in that way the number of cows I had kept. I was in despair at finding them using such a quantity of the best quality of food, though it was according to the strict letter of the contract, especially as I knew that I had given my cows rather more than the quantity of food recommended by men in whom I had perfect confidence. Thus, while Thaër names twenty-three pounds of hay, or its equivalent, as food sufficient for a good-sized cow, I gave mine full twenty-seven pounds. But if the change effected

in the management of my cows was great, the result was still more striking. The quantity of milk kept increasing, and it reached the highest point when the cows attained the condition of the fat kine of Pharaoh's dream. The quantity of milk became double, triple, and even quadruple what it had been before; so that if I should compare the product with that previously attained, a hundred pounds of hay produced three times more milk than it had produced with my old mode of feeding. Such results, of course, attracted my attention to this branch of farming. It became a matter of pleasure, and my observations were followed up with great care, and during several years I devoted a large part of my time to it. I even went so far as to procure scales for weighing the food and the animals, in order to establish exact data on the most positive basis."

The conclusions to which he arrived were, that an animal, to be fully fed and satisfied, requires a quantity of food in proportion to its live weight; that no food could be complete that did not contain a sufficient amount of nutritive elements; hay, for example, being more nutritive than straw, and grains than roots. He found, too, that the food must possess a bulk sufficient to fill, to a certain degree, the organs of digestion; and that to receive the full benefit of its food, the animal must be wholly satisfied. If the stomach is not sufficiently distended, the food cannot be properly digested, and of course many of the nutritive principles it contains are not perfectly assimilated. An animal regularly fed eats till it is satisfied, and no more than is requisite. A part of the nutritive elements in hay and other forage plants, is needed to keep an animal up; and if the nutrition of its food is not sufficient for this, the weight decreases, and if it is more than sufficient the weight increases, or else this excess is consumed in the production of milk or in labour. About one sixtieth of their live weight in hay or its equivalent will keep horned cattle up; but in order to be completely nourished, they require about one thirtieth in dry substances, and four thirtieths in water, or other liquid, contained in their food. The excess of nutritive food over and above what is required to sustain life will go in milch cows generally to the production of milk, or to the growth of the fœtus, but not in all cows to an equal extent, the tendency to the secretion of milk being far more developed in some than in others.

With regard to the consumption of food in proportion to the live weight of the animal, however far it may apply as a general principle, it should, I think, be taken with some

qualifications. The proportion is probably not uniform as applied to all breeds indiscriminately, though it may be more so as applied to animals of the same breed. Bakewell's idea was, that the quantity of food required depended much on the shape of the body; and it is well known that an animal of a close, compact, well-rounded form, will consume less than one of an opposite make.

The variations in the yield of milch cows are caused more by the variations in the nutritive elements of their food, than by a change of the form in which it is given. "A cow, kept through the winter on mere straw," says a practical writer on this subject, "will cease to give milk; and, when fed in spring on green forage, will give a fair quantity of milk. But she owes the cessation and restoration of the secretion respectively to the diminution and the increase of her nourishment, and not at all to the change of form, or of outward substance, in which the nourishment is administered. Let cows receive through winter nearly as large a proportion of nutritive matter as is contained in clover, lucerne, and fresh grasses, which they eat in summer, and, no matter in what precise substance or mixture that matter may be contained, they will yield a winter's produce of milk quite as rich in caseine and butyraceous ingredients as the summer's produce, and far more ample in quantity than almost any dairyman with old-fashioned notions would imagine to be possible. The great practical error on this subject consists not in giving wrong kinds of food, but in not so proportioning and preparing it as to render an average ration of it equally rich in the elements of nutrition, and especially in nitrogenous elements, as an average ration of the green and succulent food of summer."

We keep too much stock for the quantity of good and nutritious food which we have for it; and the consequence is, cows are, in nine cases out of ten, poorly wintered, and come out in the spring weakened, if not, indeed, positively diseased, and a long time is required to bring them into a condition to yield a generous quantity of milk.

It is a hard struggle for a cow, reduced in flesh and in blood, to fill up the wasted system with the food which would otherwise have gone to the secretion of milk; but, if she is well fed, well housed, well littered, and well supplied with pure, fresh water, and with roots, or other moist food, and properly treated to the luxury of a frequent carding, and constant kindness, she comes out ready to commence the manufacture of milk under favorable circumstances.

Keep the cows constantly in good condition, ought, therefore,

to be the motto of every dairy farmer, posted up over the barn door, and over the stalls, and over the milk room, and repeated to the boys whenever there is danger of forgetting it. It is the great secret of success, and the difference between success and failure turns upon it. Cows in milk require more food in proportion to their size and weight than either oxen or young cattle.

In order to keep cows in milk well and economically, regularity is next in importance to a full supply of wholesome and nutritious food. The healthy animal stomach is a very nice chronometer, and it is of the utmost importance to observe regular hours in feeding, cleaning, and milking. This is a point, also, in which very many farmers are at fault—feeding whenever it happens to be convenient. The cattle are thus kept in a restless condition, constantly expecting food when the keeper enters the barn, while, if regular hours are strictly adhered to, they know exactly when they are to be fed, and they rest quietly till the time arrives. Go into a well-regulated dairy establishment an hour before the time of feeding, and scarcely an animal will rise on its feet; while, if it happens to be the hour of feeding, the whole herd will be likely to rise and seize their food with an avidity and relish not to be mistaken.

With respect to the exact routine to be pursued, no rule can be prescribed which will apply to all cases; and each individual must be governed by circumstances, both in respect to the particular kinds of food at different seasons of the year and the system of feeding. I have found, in my own practice, and in the practice of the most successful dairymen, that, in order to encourage the largest secretion of milk in stalled cows, one of the best courses is, to feed in the morning, either at the time of milking—which I prefer—or immediately after, with cut food, consisting of hay, oats, millet, or corn stalks, mixed with shorts, and Indian corn, linseed, or cotton-seed meal, thoroughly moistened with water. If in winter, hot or warm water is far better than cold If given at milking time, the cows will generally give down the milk more readily. The stalls and mangers ought always to be well cleaned out before feeding.

Roots and long hay may be given during the day; and at the evening milking or directly after, another generous meal of cut food, well moistened and mixed, as in the morning. No very concentrated food, like grains alone or oilcake, should, it seems to me, be given early in the morning on an empty stomach, though it is sanctioned by the practice in the London dairies. The process of digestion goes on

best when the stomach is sufficiently distended; and for this purpose the bulk of food is almost as important as the nutritive qualities. The flavour of some roots, as cabbages and turnips, is more apt to be imparted to the milk when fed on an empty stomach than otherwise. After the cows have been milked, and have finished their cut food, they are curried down, in well-managed dairies, and then either watered in the stall, which in very cold or stormy weather is far preferable, or turned out to water in the yard. When they are out, if they are let out at all, the stables are put in order; and, after tying them up, they are fed with long hay, and left to themselves till the time of the next feeding. This may consist of roots, such as cabbages, beets, carrots, or turnips, sliced, or of potatoes, a peck, or, if the cows are very large, a half bushel of each. Cut food is again to be given at the evening milking, as in the morning, after which water in the stall, if possible.

The less cows are exposed to the cold of winter the better. They eat less, thrive better, and give more milk, when kept housed all the time, than when exposed to the cold. Mr. Caird mentions a case where a herd of cows, which had been usually supplied from troughs and pipes in the stall, were, on account of an obstruction in the pipes, obliged to be turned out twice a day to be watered in the yard. The quantity of milk instantly decreased, and in three days the falling off became very considerable. After the pipes were mended, and the cows again watered as before in their stalls, the flow of milk returned. This, however, will be governed much by the weather; for in very mild, warm days, it may be judicious not only to let them out, but to allow them to remain out for a short time at exercise.

Any one can arrange the hour for the several processes named above, to suit himself; but, when once fixed, let it be rigidly and regularly followed. If the regular and full feeding be neglected for even a day, the yield of milk will immediately decline, and it will be very difficult to restore it. It may safely be asserted, as the result of many trials and long practice, that a larger flow of milk follows a complete system of regularity in this respect than from a higher feeding where this system is not adhered to.

One prime object which the dairyman should keep constantly in view is, to maintain the animal in a sound and healthy condition. Without this, no profit can be expected from a milch cow for any considerable length of time; and, with a view to this, there should be an occasional change of food. But, in making changes, great care is required to

supply an equal amount of nourishment, or the cow falls off in flesh, and eventually in milk. We should, therefore, bear in mind that the food consumed goes not alone to the secretion of milk, but also to the growth and maintenance of the bony structure, the flesh, the blood, the fat, the skin, and the hair, and in exhalations from the body. These parts of the body consist of different organic constituents. Some are rich in nitrogen, as the fibrin of the blood, albumen, &c., others destitute of it, as fat; some abound in inorganic salts, phosphate of lime, salts of potash, &c.

MIASMATIC CONDITION OF THE ATMOSPHERE.

M. Houzeau has recently sent in a paperto the Academy of Sciences in which the capacity of atmospheric air as a vehicle of miasmata is discussed. Amongst the various points elucidated by the course of experiments instituted by M. Houzeau, one of the most prominent is the frequency of the variations undergone by the atmosphere in respect to its chemical qualities. Thus if pieces of litmus paper of the same size be exposed to the air on the same day and at the same hour, in a spot sheltered from rain as well as from the solar rays, it will be found that in the country these bits of paper will have lost their colour entirely at the end of three or four days, whereas in a town hard by they will have undergone little or no change. But at the same time it was observed that, though the discolouring or bleaching power of air is stronger in the open country than in a town, the power of converting the blue tint of litmus into red is much greater in a town than in the country. In general, the evidence of an acid condition of the air, as manifested by this change of colour, may be obtained forty-eight hours after exposure. The paper subjected to experiment is reddened at its edges first. It is often noticed also that the action of the atmosphere is different on two pieces of test-paper placed only a few yards apart on the same horizontal line, but separated by some building, such as a dwelling-house for example, standing in an open meadow. At Rouen it was noticed that blue litmus is discoloured much more completely at the top of the cathedral than at a distance of six yards from its base.—*Lancet.*

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Annales de Médecine Vétérinaire, Bruxelles, Jan. 1861.

ON THE USE OF ALKALIES IN CASES OF PNEUMONIA OCCURRING IN MILLERS' HORSES.

By M. Guilmot.

The author avers that pneumonia in millers' horses is more acute than among others, on account of the large quantity of farinaceous food which is given to them. This kind of aliment produces an almost constant state of plethora, which leads to sudden attacks of violent pulmonary phlegmasia, and which do not yield to the ordinary means of treatment, viz., bleeding, sedatives, and revulsives, but, despite of these, run their course without the least check.

The alkaline agent employed by the author is the bicarbonate of soda, in doses of from four to eight drachms in the course of twenty-four hours. This agent acts on the blood, and has the property of defibrinating it. The alkali is given in addition to the usual remedies employed in cases of pneumomia, and with the happiest result.

DEATH OF A HEIFER FROM A PIECE OF POTATO IMPACTED IN THE COLON.

By M. Andre.

The animal was suddenly attacked with violent abdominal pains, which lasted for twenty-four hours, and for which the usual remedies were given, but without relief being obtained. In consequence of this, M. André was sent for, and found the animal *in articulo mortis*.

On making a *post-mortem* examination, a rupture of the intestines was discovered, which was caused by a piece of potato being fixed in the colon, near to its termination in the rectum, and about two feet from the anus.

This case is interesting, in so far as it proves the necessity of exploring the rectum in all cases of abdominal pain. In

dogs fragments of bones are frequently found arrested in the rectum, causing obstruction and death.

A SUBSTANCE TO SUPPLY THE PARTIAL LOSS OF HOOF.

By F. M. Defays.

Accidental breaches and loss of hoof in the horse being not only unsightly, but also causes which render shoeing unsafe, and prevent the horse from doing his usual work, M. Defays has endeavoured to discover a substance that will not only conceal these defects, but be of such solidity as to bear the nailing on of the shoe, and of such consistency that it can be moulded into shape so as to be easily applied to the parts, while at the same time it will not be affected by exposure to moisure. Of all the substances the author experimented with, gutta-percha was the only one which offered any chance of success. When the fabrication of gutta-percha soles was introduced, the author conceived the idea that means similar to those employed to fix them to boots and shoes would be equally efficacious for the purpose of attaching the material to the horse's hoof, but the experiments proved a failure, although he was assisted by M. Ledrow, a celebrated manufacturer of boots and shoes. Notwithstanding all the care and trouble they took they could not obtain the slightest adherence between the substance and the hoof. After several failures, it was found that an admixture of gutta-percha and gum ammoniac offered some chance of success. Two parts of gutta percha with one part of gum ammoniac, melted together over a slow fire, and well incorporated by frequent stirring, was found an excellent agent for the required purpose.

To apply it, the hoof should be perfectly dry and free from grease. The composition, after being warmed, is to be applied with a spatula, and smoothed over by a heated piece of iron.

M. Defays adduces several instances in which this substance has been applied to horses, which have been able to work when they otherwise could not have done.

METHOD FOR THE REDUCTION OF THE UTERUS AND VAGINA IN CASES OF PROLAPSUS.

By M. Tyvaert.

M. Tyvaert lays great stress on the importance of the reduction of the uterus and vagina in an obstetric point of view, and the difficulty and non-success of the means hitherto adopted. His method is to secure the patient on her back by means of a rope attached to the legs and passed over a beam or rafter, or, in the absence of either of these, a long pole placed on the shoulders of two strong men, after which the posterior parts are to be raised by means of trusses of straw. This position obtained, the organs are to be well cleansed. The reduction is so easy that a slight manipulation suffices to effect it. This position on the back not only facilitates the reduction, but prevents almost entirely the expulsive efforts of the animal, which would otherwise so much exhaust the strength of the operator.

The reduction effected; another difficulty presents itself, which is of no less importance, namely, that of maintaining the organs *in situ*, as the patient is continually straining to expel them. The means recommended by the author to prevent this are to fix the animal by a sling to the ceiling, or by passing a cord round each hind leg and fixing it so as to prevent her lying down, at the same time elevating the posterior part of the body. This position also prevents to a great extent the expulsive efforts, in so far that the animal cannot raise its back nor bring its feet together. This is more effective in preventing a recurrence than all bandages, sutures, sedative medicines, or distending the uterus by injecting fluids, &c., which are in the majority of cases ineffective.

Clinique Vétérinaire.

Edited by MM. U. Leblanc, C. Leblanc, and E. Weber.

The *Clinique Vétérinaire*, which was discontinued in 1848, as it was then thought that three veterinary journals sufficed in France to supply the scientific wants of the profession, has now reappeared. The first two numbers of this new

periodical are entirely taken up by a project of law for the protection of the qualified veterinary surgeon against the empiric. The necessity of a law for the protection of the veterinary profession analogous to that in existence for the medical profession, has long been felt in France. No less an authority than M. Renault, Inspector of the Veterinary Schools, has said *that he remarked, with regret, the progressive decline of the veterinary profession*. The cause of this, as every one in the profession knows, is the want of a law to regulate the exercise of it. In 1848 a commission was named by the Minister of Agriculture to prepare a project of law for the protection of veterinary medicine, which, however, was not followed up, and it is from that time principally that may be dated the decline of the profession. Many of those who obtain their diploma after four years' hard study finding that, on account of the numerous quacks existing, they are not sufficiently employed to get a living, turn their attention to some other source of gaining a livelihood; and many of those who continue to practise are compelled to add some other business to it, such as a chemist and druggist, grocer, or even coffee-house and innkeeper. According to M. Leblanc, the number of qualified veterinary surgeons in actual practice in France is only 2400, not more than double what they were in 1813, when the decree for the formation of *maréchal-expert* was passed. No other proof is necessary to show that, if the profession is not gradually decreasing, at all events there is no proportional increase. This project of law consists of fourteen clauses. The first clause enacts that no one shall take the title of veterinary surgeon unless he has legally obtained a diploma. The second clause enacts, that no one shall medically treat domestic animals unless he has the title of veterinary surgeon, except those comprised in Clause 3, which reserves the right to practise the veterinary art—1st, to those who have obtained the certificate of *maréchal-expert* in conformity with the imperial decree of 1813; 2d, to those who, at the promulgation of the present law, have been four years or more in the practice of the said art, and whose practical knowledge shall have been attested by a jury named by the préfet of the department for that purpose, the jury to be composed of three veterinary surgeons, one physician, and one agriculturist; but it is provided that the candidates shall present themselves within two years after the passing of the law; this certificate to be available only for the department in which it has been granted, and the *maréchal-expert* to submit to another examination when a change of department is intended.

Clause 4 reserves the exclusive right to veterinary surgeons to be employed by the courts of justice, and also by the civil administration and military authorities in all cases relating to the medical treatment of domestic animals, and likewise in contagious and epizootic affections. Clause 5 enacts that the apothecary shall deliver the necessary medicines on the prescription in writing of a *maréchal-expert* or a certified practitioner. Clause 6 is to authorise veterinary surgeons to keep their own pharmacy, without, however, to dispensing of any medicines except for those animals under their special care and treatment. Clause 7. Veterinary surgeons with diplomas from foreign schools are not allowed to practise without the authorisation of the Minister of Agriculture. Clause 8 settles the penalties to be inflicted on all contravention of the law; it is to consist of a fine, and, in case of repetition, of increased fine and imprisonment. Clause 9 provides for the poorer districts, where a veterinary surgeon would not otherwise reside, an indemnity of a certain amount, to be paid by the government, on condition that the cattle of the poor shall be treated gratis. Clause 10 creates a veterinary council in each department, the office of which is to inform the administration on all questions relating to the multiplication of domestic animals, sanitary police, &c. Clauses 11, 12, 13, and 14, are for the regulation of the departmental council.

Belgium, for more than ten years, has possessed a law protecting the practice of veterinary medicine. Holland has destroyed the leprosy of empiricism. The King of Saxony has decreed that only veterinary surgeons who have obtained their diplomas shall have the right to treat diseased animals. The government of Bavaria has promulgated a law, that the exercise of the veterinary art is only permitted to those who have obtained a diploma. The Duke of Baden has issued a decree against empirics, punishing them with fine and imprisonment. Nearly all the states of the Confederation of Germany have laws against empiricism.

THE ANNUAL DINNER OF THE PROFESSION.

This convivial *réunion* took place in the evening of the 6th ult., at the Freemasons' Tavern, Great Queen Street.

It was our intention to have given a detailed account of the meeting, but the great demands which are made upon our space in the present number have prevented this being

done. The chair was occupied by Mr. Silvester, and among those present were Professors Spooner, Simonds, and Gamgee, with Messrs. Batt, Braby, *Treasurer*, T. D. Broad, Burley, Collins, 16*th Lancers*, Cook, Dickens, W. Field, jun., Gabriel, *Secretary*, Goodwin, Hall, Harpley, *Royal Horse Guards Blue*, Henderson, Hunt, W. Mavor, Moon, Murch, Rowe, W. Stanley, S. H. Withers, Woodger, Woodger, jun., and E. Woodger.

The evening was spent in a very social and agreeable manner, one thing alone having to be regretted, namely, the few members of the profession who attended. This, however, must not lead us to despair of seeing a more gratifying state of things in future years. Nothing is more easy to accomplish than this, when the *modus operandi* is understood and rightly carried out.

NEW MEMBERS OF THE PROFESSION.

At the recent meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, the following students of the several schools, having passed their examination, were admitted members of the body corporate.

STUDENTS OF THE ROYAL VETERINARY COLLEGE, LONDON.

Mr. Thomas C. Small . .	Birmingham.
— William H. Holmes .	Beverley, Yorkshire.
— John Tilsley	Tregynon, Montgomeryshire.
— James Darling . . .	Windsor.
— H L. Simpson . . .	Windsor.
— John Wiggins . . .	Kettering, Northamptonshire.
— Thomas Sangster . .	London.
— J. Marshall Clayworth .	Spilsby, Lincolnshire.
— James Hall Brown . .	Wanstead, Essex.
— Charles Colebrook . .	Arundel, Sussex.
— Frederick Simkin . .	Barrow, Suffolk.
— John H. Farrow . . .	London.
— John Day	Stockbridge, Hants.
— John Hopkin	Lynn, Norfolk.
— Henry Crofts	Australia.
— Anthony Stainton . .	Holloway.
— W. Christopher Hoyland	Louth, Lincolnshire.
— Samuel Francis Fallding	Wentworth, Yorkshire.
— Alfred Prudames . .	Great Berkhampstead.

Mr. Charles Wm. Gregory	Crediton, Devonshire.
— Robert William Cowell	Hatfield Peverel, Essex.
— Edmund Barker . . .	St. Faith's, Norfolk.
— Herbert Buckingham .	Barnham Broom, Norfolk.
— Peter Salmon Dollar .	London.
— Samuel Shapland White	Barnstaple, Devon.
— Charles William Blake	Crewkerne, Somerset.
— John Hanley	Knightsbridge, London.
— J. Wilkinson Anderton	Skipton, Yorkshire.
— Edw. G. Pearce Arnall	Camelford, Cornwall.
— Arthur Edw. Constant	Ramsgate, Kent.
— Alfred Large	New York, America.
— Henry Rose Perrins .	Worcester.
— F. Whitfield Wragg .	Walthamstow, Essex.
— Robert Gates	London.
— Richard Leal Shaw . .	India.
— Edward S. Edgar . .	Dartford, Kent.
— Benjamin Checketts .	Wolverhampton, Staffordshire.
— John McDermott . .	Belfast.
— George B. Webb . .	Balsham, Cambridgeshire.
— Henry Ferris	Dittisham, Devonshire.
— Charles A. Calvert . .	Ayr, North Britain.
— Alfred Over	Rugby, Warwickshire.

STUDENTS OF THE EDINBURGH VETERINARY COLLEGE.

Mr. T. White	North Wales.
— W. Hardy	Durham.
— Daniel McLean . . .	Glasgow.
— G. Stewart	Penrith, Cumberland.
— A. Robb	Glasgow.
— J. Brydon	Peebles.
— J. Bell	Carlisle.
— D. M'Meachan . . .	
— James Law	Edinburgh.
— W. Hall	Newcastle.
— G. Thomson	Horncastle.
— J. Edward.	Flintshire.
— Samuel Joseph Wills .	Axminster, Devon.*

STUDENTS OF THE NEW VETERINARY COLLEGE, EDINBURGH.

Mr. William Cope . . .	Ashbourne, Derbyshire.
— Andrew Robbie . . .	Banchory Ternan.

* This gentleman passed his examination before the London section of the Court of Examiners.

Mr. John Joss	Aberdeenshire.
— James Gordon . . .	Aberdeenshire.
— George Robertson . .	Ellon.
— P. Galloway	Perthshire.
— D. C. Emmott . . .	Thorlby, near Skipton.

HIGHLAND AND AGRICULTURAL SOCIETY'S EXAMINATIONS.

The following students of the Edinburgh Veterinary College have received the certificate of the Highland and Agricultural Society.

Mr. John Bell	Carlisle.
— Hugh McMillan. . .	Aberfeldy.
— John Womack . . .	Corbridge, Northumberland.
— John Balfour	Montrose.
— Robert Dickie . . .	Yoker.
— Thomas Wainwright .	Sherburne, Yorkshire.
— Daniel McLean . .	Glasgow.
— Joseph Tait	Portsoy.
— Alex. Brackenbridge .	Holytown, Lanark.
— George Scott	Earlston, Berwickshire.
— D. McNab McEachran	Campbeltown.
— William Kerr. . . .	Beith, Ayrshire.
— Thomas White . . .	Corwen, Wales.
— William Hardy . . .	Durham.
— William Hall	Sedgefield, Durham.
— Alexander Gillespie .	Corstorphine.
— Charles Gray. . . .	Wishaw.
— Samuel J. Wills . . .	Axminster, Devon.
— Peter Walker. . . .	Luss, Dumbarton.
— Andrew Smith . . .	Dalrymple, Ayr.
— Andrew Robb . . .	Parkhead, Glasgow.
— Septimus Lambert . .	Manchester.
— Alexander Hamilton .	Mid-Lothian.
— George Steward . . .	Penrith.
— Henry Ramsay . . .	Aberdeenshire.
— James Donaldson . .	Paisley.
— Wm. Gregory Willett .	Cheshire.
— William Fleming . .	Oldham.
— Alexander Chisholm .	Blackshields.
— John Cassie	Aberdeenshire.

Mr. Thomas Jackson . .	Portadown, Armagh.
— Robert Laing. . . .	Carron
— Peter Moir . . .	Edinburgh.
— Michael F. Healey . .	Clare Castle.
— George Lewis. . .	Monmouth.
— Neill McKechnie Barron	Old Deer, Aberdeen.

Veterinary Jurisprudence.

COURT OF QUEEN'S BENCH.

(Sittings at Nisi Prius, before Mr. Justice WIGHTMAN *and a Common Jury.)*

BAKER *v.* STRONG.

THIS was an action brought by the plaintiff, an old lady, occupying a farm at Adderly Common, against the defendant, Captain Strong, to recover damages for having emptied dirty water from his grounds on to the plaintiff's farm, whereby she had sustained considerable loss. The defendant pleaded not guilty.

Mr. Montague Chambers, Q. C., and Mr. Prentice, were council for the plaintiff. Mr. Huddleston, Q.C., and Mr. Philbeck for the defendant.

It appeared from the evidence of the plaintiff, that during the month of November last the defendant was desirous of emptying a stagnant pool of water in a field adjoining his house, and for that purpose he dug a trench from it, to a pond on the plaintiff's farm from which the cattle used to drink. The plaintiff alleged that she had lost cattle to the value of £100, through their having drunk the filthy water.

The defence was, that the allegation on the part of the plaintiff that the water was filthy or stagnant was false, and that the cattle died from the lung complaint, and not from drinking the water.

The jury ultimately returned a verdict for the plaintiff, damages £80.

PONTEFRACT COUNTY COURT.—APRIL 23.

(*Before* T. H. MARSHALL, ESQ , Judge.)

EARNSHAW *v.* BARSTOW.

This was the only important case for trial at this court, for which a jury had been empanneled. The plaintiff lives at Hemsworth, and the defendant was, at the time of the transaction, a clergyman residing at Rawcliff. The action was brought to recover the sum of £35 8*s.* 1*d.* part purchase money of a horse sold by the Rev. M. W. Barstow, to Mr. Earnshaw.

Mr. Smith, of Doncaster appeared for the plaintiff, and Mr. Wainwright for the defendant.

Mr. Smith, in opening the case, said, that the horse was sold to the plaintiff on the 24th of April, 1860, for £32 10*s*., by Mr. Henry Earnshaw, a relative of the plaintiff's, who acted as agent for Mr. Barstow. At the time the purchase money was paid, Mr. Barstow gave Mr. Earnshaw a warranty in writing that the horse was free from blemish and sound in all respects; but shortly afterwards the plaintiff discovered that the horse was unsound in his feet and in his wind; and in consequence he was used with great caution, and turned out to grass, as it was thought that by these means he might recover, and Mr. Earnshaw wished for no dispute if it could be possibly avoided. The horse was examined by two veterinary surgeons, but did not recover. A letter was in consequence written to Mr. Henry Earnshaw by the plaintiff, explaining the deficiencies of the horse, and stating that it had been injured by previous hard work. In answer to this, Mr. Barstow wrote a letter, saying that the plaintiff must have worked the horse hard himself and injured him, and that he should not take it back. Further correspondence ensued, and ultimately the present action was brought.

Mr. Rawden Earnshaw, the plaintiff, was then called and said—I met Mr. Henry Earnshaw on the 6th of April, 1860, who told me that he had a horse for sale; I went over to Rawcliffe on the 12th of April, and tried the horse; and afterwards saw Mr. Henry at Pontefract, and sent a message to Mr. Barstow that I would have the horse. I gave £32 10*s*. for it, and had 10*s*. returned. I took it home on the 24th of April. The next day I rode it to Brierly, and noticed that it was rickety. The next day I sent it to my son, at Wath, and it then went to Barnsley I sent the horse to grass on the 3d of June, because my son complained of its being rickety. The horse, however, got no better. I did not return him, because Mr. Barstow said, at Pontefract, that no doubt after a little rest all would be right.

By Mr. Wainwright—Proctor, who was Mr. Barstow's groom, said when I purchased the horse, that it had lately done the work of two horses. I did not tell Mr. Barstow that it had gone in a rickety manner. I never asked Mr. Barstow to give a warranty before I placed it before him; he signed it without hesitation. The horse was examined by a veterinary surgeon on the 8th of August.

Mr. Wm. Earnshaw.—I am the son of the plaintiff. The horse was purchased for me. It went to grass on the 3d of June, and stopped until the beginning of July. In the early part of July I went with the horse to Doncaster. On the 21st I went from Wath to Doncaster; on the 30th to Barnsley; on the 1st or 2d of August, to Wentworth House; on the 5th to Doncaster, for the last time. On the 8th the horse was examined by Mr. Stones. I had observed that the horse went very rickety, and appeared to be unsound.

By Mr. Wainwright.—I did not know that it was what is called a "short struck" horse.

Mr. Stones said—I am a veterinary surgeon, and a member of the R.C.V.S. On the 12th of May I was called in to examine the horse, it having caught a cold; it recovered from the cold. On the 8th of August I again examined it, and found it to be suffering from *chronic laminitis*, in both its fore feet. I examined the hoofs and found them hot, and there were indentations around the coronet, indicating that there had been inflammatory action some time before. In my opinion the disease existed previous to the 24th of April, and proceeded from hard work upon the road. I tested his wind by attempting to strike him, which

caused the animal to make a noise when taking in his breath, and indicated unsoundness in his wind.

Mr. R. Nicholson, veterinary surgeon, Womersley, who was also called in, gave corroborative testimony to the above.

Mr. Benjamin Cartledge, veterinary surgeon, and member of the Board of Examiners, Sheffield, said—I examined the horse on Friday last, and found it to be a "whistler," which is an unsoundness. I also discerned, round the near foot, indentations, being evidence of previous existing inflammation. Judging from the evidence, coupled with the present state of the horse, it was, not in my opinion, sound on the 24th of April.

This being the case for the plaintiff, *Mr. Wainwright* addressed the court, urging that the horse was sound in every respect, when sold by Mr. Barstow, and he would call witnesses to prove that such was the case, and if so he submitted that he was entitled to a verdict.

Mr. Charles Whittam, horsebreaker, was then called, and said, I have known the horse four years, and never knew it to be unsound; it never went lame, but had low action, and was a hard goer.

Thomas Proctor, groom to the defendant, gave similar testimony.

Rev. M. W. Barstow, the defendant, said—I had the horse nearly twelve months, and never knew it to be lame. There was nothing said about a warranty until the document was put into my hands by the plaintiff.

Mr. Naylor, veterinary surgeon, Wakefield, said, I saw the horse in September last, and again in November, and having examined it, I found it free from lameness, certainly no *chronic laminitis* was present. I tried him as regarded his wind in November, and found him to be a "whistler," but considered it a recent affair. I observed that the indentations were nothing but what was natural. The putting out the horse to grass in such a season as it was last summer might make it come up a "whistler."

Mr. Dray, veterinary surgeon, Leeds, said—On the 11th January of this year, at the request of both parties, I examined the horse, and found it to be free from any blemish whatever, and nothing to indicate that he had been suffering from any chronic disorder of his feet. After having heard the evidence, I am quite satisfied that the horse was not in April suffering from *chronic laminitis*.

Mr. H. Earnshaw, and *Mr Cuthbert*, veterinary surgeons, gave similar opinions to the above.

Mr. Moxon was called by *Mr. Smith*, and said—I sold the horse at Wakefield, for £15. Mr. Naylor said, at the sale, it was lame. I also remared that it was lame.

This closed the defendant's case, and *Mr. Smith* addressed the jury at some length in reply, contending that the facts were in favour of the plaintiff; that discovery of unsoundness had been made, and notice given soon after the sale; and that the plaintiff's veterinary evidence was more to be relied upon than the defendant's.

His Honour summed up with great care and minuteness, pointing out how nicely balanced the evidence on both sides was, and leaving it for the jury to say which was in the right.

The jury retired, and on their return found a verdict for the plaintiff for the amount claimed. Judgment for plaintiff accordingly.

A FARMER CONVICTED OF STARVING HIS COWS.

At the West Riding Police-court, at Huddersfield, a few days since, John Holroyd, a farmer, owning about four acres of land at Marsden, in Huddersfield, was charged by Mr. Superintendent Heaton, with cruelly and wantonly ill-treating and abusing three cows, his own property. On Tuesday last Mr. Heaton went to the defendant's premises, where he found a cow slung up in the barn, a plank being placed under its belly and hinder part, and some sacking placed behind its fore legs and hips. It was living at the time, but in a most deplorable condition. The defendant refused to send for a veterinary surgeon, though urged to do so, saying he believed the animal would recover. It appeared that about a month since this cow had fallen a distance of about two yards, from a field into the road. At that time it was so weak as hardly to be able to stand, but it was got to the barn, where it was allowed to lie without attention or care. There were two other cows in a field described by a witness as resembling walking skeletons, and stated to be so weak that, though able to stand, they could be easily pushed down by a touch of the hand. This weak condition was said to result solely from the want of food. The defendant, an old man, was convicted; but the bench, merely wishing to give him a caution as to his future conduct, reduced the penalty to 10*s*. and the expenses, amounting in all to two guineas.

ARMY INTELLIGENCE.

The Secretary of War, acting upon the suggestion of a committee of officers appointed to consider the regulations of the yeomanry service, has decided, among other things, that a regiment have one lieutenant-colonel commandant, one lieutenant-colonel, two majors, one surgeon, and one veterinary surgeon; and that in future, when the yeomanry are called out for training or ordinary permanent duty, the present rates of pay and allowance shall cease, except in the case of the *adjutant, surgeon, assistant surgeon, and veterinary surgeon,* and that in lieu thereof an allowance of seven shillings a day shall be made to each officer. In the event of the yeomanry being called out in aid of the civil power, or for extraordinary duty, the old rate of pay shall be given. The new regulations will come into force in the different corps when they are assembled for training this summer.

OBITUARY.

We have to record the death of Mr. William Dycer, veterinary surgeon, Dublin. A writer in the *Irish Agricultural Review* says of him—

"Another star has passed away. William Dycer, the last of his name connected professionally with horses, is no more. Like a meteor, he flashed through the horizon of veterinary science; his career brief, though brilliant. Endowed by nature with strong physical as well as mental powers, and inheriting independence of character as well as means, in early life he gave rein to the impulse of his nature, and devoted himself principally to the manly sports peculiar to his country, his innate aptitude for some of which was most strikingly evinced, though not solely at the expense of intellectual study. Though the name of Dycer had become as familiar as household words in its association with that noble animal, the horse, he first became a veterinary surgeon from taste, and not from any motive of practising it as a vocation; but when his brother Edward died—regretted by all as a friend, a gentleman, and a citizen, fully as much as he had been admired through life as a man of talent, truth, and professional probity, as well as brilliancy—William Dycer, the subject of the present obituary (from the pen of one who was the playmate of his childhood, as well as in after years one of his fellow-labourers in the field of veterinary science), launched into the practice of hippiatric surgery, as a candidate for public favour and emolument. His professional career, though short, was frequently brilliant, always honorable. In private life he evinced such striking proofs of his social standard and tastes, both natural and acquired, that few who had the privilege of his acquaintance can ever hope to meet his like again. He died on the 24th instant, at midnight, aged 39 years. His illness was sudden, his death unexpected. *Requiescat in pace.*"

Died, at Kamptre, Thomas Arnold, M.R.C.V.S., 4th Madras Native Light Cavalry. His diploma bears date June 21st, 1843.

THE

VETERINARIAN.

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Communications and Cases.

ON THE ACTION OF ALCOHOL ON THE SYSTEM.

The division by Liebig of alimentary matters into two grand classes—viz., elements of nutrition and elements of respiration, or nitrogenized and non-nitrogenized substances, has been pretty generally accepted by chemico-physiologists, and is well known to our readers. The first-named are capable of being converted into blood,—having a composition identical, or nearly so, with it,—from which all the organized tissues of the frame are formed. The latter, not undergoing this transformation, serve to support the process of respiration, by which the heat of the body is produced.

To bring about this, such substances must necessarily be burnt up in the organism, which is effected by the action of the inspired oxygen, or should they not, they become deposited as fat. Among them we find alcoholic fluids placed; and hitherto it has been accepted and taught that these, in common with sugar, starch, and the allied bodies, by the process of slow combustion already referred to, generate heat and furnish carbonic acid and water. To this theory Dr. Edward Smith demurs, averring that alcohol passes out of the system unchanged, acting indirectly rather than directly as a generator of warmth, it being a general stimulant, and only slightly increasing the respiration. He says—

"As to the influence of alcohols upon the respiration and the heat-forming function, to chemists we owe the statement that alcohol aids in the heat-forming function of the body, because it is an hydrocarbon; and that as it is transformed in the system, and eliminated as carbonic acid and water, it must yield heat in these transformations. Hammond and all others found that alcohol lessened the quantity of carbonic acid expired, but no one has pointed out the inconsistency of this statement with the

chemical view to which all these observers have given their adhesion—viz., that alcohol is resolved into carbonic acid, which must pass out by the lungs, and thereby increase the evolution of carbon. Lallemand, to whom we shall refer presently, when denying the transformation of the alcohol, says that he does not understand how alcohols lessen the excretion of carbonic acid, but upon this point he had not experimented."

Having shown the objections that could be fairly raised to the experiments from which these inferences were drawn by him, he adds—

"The results of my experiments have not entirely corresponded with those now referred to; but having collected the carbonic acid for five or ten minutes at a time every fifteen minutes during the action of the alcohol, with the expiration quite free; having maintained a uniform state of rest, having experimented in the absence of food or any other cause of disturbance, and having taken one moderate dose at each experiment, it is hoped that the nearest approach to the true action of alcohol has been made. Moreover, the number and extent of the experiments far exceed those which all previous observers have recorded. For the description of the method and apparatus employed, as well as the details of the experiments, I must refer to the 'Philosophical Transactions' for 1859.

"Alcohol, in every dose up to the usual one in taking spirits and water, increased the amount of carbonic acid evolved, but not with the uniformity of a food, nor to a greater average extent than one-eighth to half a grain per minute. The effect was much more sustained when a small dose, as half an ounce, was repeated every quarter of a hour. Prout, and all observers, have noticed the want of precise uniformity in the action of alcohol."

Having combated the statement that alcohol arrests the waste of tissues, and at the same time diminishes the amount of urea, which principle "may proceed either from the tissues, from the transformed food, or from excess of food," he adduces the scientific researches on this subject of

"MM. Lallemand, Perrin, and Duroy, who have just shown that when a moderate dose of alcohol has been taken, either by a man or a dog, the alcohol can be found in the expiration, the perspiration, and the urine, for at least eight hours afterwards. They have not collected the alcohol, but they have shown its presence by its action upon the bichromate of potass in sulphuric acid, and have proved that this action is not produced by the allied substance aldehyde. They affirm, therefore, that alcohol is not transformed in the system, but passes off from the body unchanged; and the fact that alcohol is found unchanged in the brain for a period of seventeen, and, it is said, for thirty-six hours, strengthens their belief. I have carefully repeated their experiments, and have shown, on several public occasions, the reaction of the alcohol on the breath for four hours after an ounce and a half has been taken. In the case of the skin, M. Lallemand proved the secretion of alcohol, by enclosing an Italian greyhound in a glass case, and passing a current of air over it and through the test; but I have proved its presence in the vapour passing off from so small a part of the body as the arm, and even the hand only, of man. In repeating this latter experiment, sheet caoutchoue must not be used, neither must the containing bag or vessels be employed a second time without having been well cleansed

from the alcohol which was left from the former experiment. It will also be more efficiently performed in those persons who perspire freely; for it is highly probable, that whilst alcohol may, in all persons, pass out of the body by all the above-mentioned outlets, it will chiefly select that excretion in each individual which is naturally the most free. As, for example, the breath in those who make much exertion, or in cold; the skin in those who perspire freely, and in warm weather; and the kidneys in others. The test is prepared by carefully dissolving one part of bichromate of potash in 300 parts of strong, pure, sulphuric acid, and it is used by passing the breath through about a drachm of it placed at the bottom of a tube, six or eight inches long. The cherry-red colour is changed to emerald green.

"Thus we are led to the following summary of the mode of action of alcohol:

"1st. The action of the heart is reinforced, and by it the fulness and freeness of the circulation are maintained, and the blood is carried to the remote parts and to the surface. The tendency to accumulate fluid increases the fulness of the bloodvessels.

"2nd. The action of the skin is lessened, whereby the loss of heat is reduced, the urgent necessity for food and vital transformation is lessened, and the sensation of warmth is increased. The local action upon the stomach and alimentary canal is that of a stimulant, and increases vascular action and warmth. These are the common and general actions of alcohols; but in some persons the skin acts more freely than in others.

"3rd. Alcohol is probably not transformed, and does not increase the production of heat by its own chemical action, but indirectly, as above mentioned, and by a general temporary increase in the vital actions. Its action upon the respiration is not its important action.

"4th. It interferes with alimentation, and causes the retention of water, and thereby lessens the excretion of urea; and if it lessen muscular waste (which it has not been proved to do), it must be by lessening vital action. Its power to lessen the salivary secretion must impede the due digestion of starch. The diminution in the elimination of urea is due in part, as just mentioned, to the diminution in the excretion of urine by the kidneys.

"5th. It lessens muscular power, and the production of certain secretions.

"6th. There is no evidence that it increases nervous influence, except the action upon the heart and the elevation of the spirits be regarded as such; whilst there is much evidence that it lessens the nervous power, as shown by the mind and the muscles.

"7th. It varies the balance of the circulation at the centres and the superficies, and interferes with the production of heat.

"8th. It has two sets of actions.

"9th. The system acquires an adapting power more or less easily and perfectly, and hence alcohols differ sometimes in their action in different persons.

"10th. There are other important elements in ales, wines, and spirits, having a different and independent action; so that old wines directly lessen vital action, and ales directly promote the transformation of food.

"The dose influences the phenomena of the action of alcohols, but only in degree, although it is common to consider the action to differ in doses which are called moderate and excessive respectively, the former being stimulating, and the latter exhausting. So far as the direct action upon the mind, with its intellectual and sensual perceptions, upon the muscles, and upon the respiration, is concerned, we could not perceive any difference in effect but one of degree; but, doubtless, in indirect effect, that dose which most powerfully acts upon the system directly will be the most likely, by

the disturbance of the functions of the system, to produce indirect effects which will tend towards disease."

A writer on this subject in the *British Medical Journal* says—

"The question of the action of alcohol on the system, and its value as a dietetic and therapeutic agent, is now attracting much attention both amongst the members of our profession and the scientific world at large. No doubt can be entertained of the importance of a consideration of the subject—a consideration, however, into which our limits will not allow us fully to enter. If there were one cherished view which we thought chemistry had taught us, it was surely that alcohol was oxidized in the system, and thus made subservient, if not to the formation of some of the tissues of the body, at any rate to the maintenance of animal heat. However indisposed physiologists may have been of late years to give in their adhesion to the theories of Liebig as to the division of alimentary materials, we think that most have been, and probably many will still be, disposed to consider the substance we are speaking of in the light of a heat-producing agent. Our opinions on this point have, however, been somewhat rudely assailed, and the position which alcohol has occupied as a dietetic article is threatened with imminent danger. As from the chemists we received the theory of its combustible nature, so from chemical research and experiments now comes the opposite doctrine of its entire elimination, unchanged from the body.

"Considering the vast amount of alcohol which is daily consumed, whether as a general article of diet or in the treatment of disease, it becomes a matter of essential importance that correct principles should be laid down with reference to its *modus operandi*, and the manner in which it is disposed of in the system. We cordially hail, therefore, the appearance of the work of Messrs. Lallemand, Perrin, and Duroy (*Du Rôle de l' Alcohol et des Anesthésiques dans l' Organisme*, Paris, 1860), which gives us the results of the most recent experiments and researches on the subject. A careful perusal of this work has convinced us that some of our views of the dietetic value of alcohol require modification; but we cannot, on that account, allow the evidence which is brought forward, and which does not appear to us conclusive on the point, to make us discard altogether the substance of which we are speaking from our list of alimentary materials.

"If we were briefly to sum up the facts which the researches of the above authors seem to have established, they would be these:—That after any fluid containing alcohol is taken the latter becomes eliminated, unchanged by the various secreting organs—the skin, the liver, the kidneys, the lungs; and not only this, but that it is deposited in all the tissues, and can be extracted alike from the substance of the brain, the liver, the muscles, and the cellular tissue, as well as from the blood. It is right to observe that even when small quantities of alcohol were taken, traces of it could be found in the excretions; thus proving that it is not simply when the substance is taken in excess that it becomes eliminated without change.

"From the results of their experiments, MM. Lallemand, Perrin, and Duroy think they are justified in concluding that all the alcohol ingested, with the exception of a small quantity which they and other experimenters have found converted into acetic acid in the stomach, is eliminated from the body, without undergoing any change whatever; and that in this respect it resembles in its action the various anæsthetic agents, such as chloroform, &c. From these conclusions necessarily follows the inference, that alcohol cannot be considered in the light of an alimentary substance.

"We believe Dr. Percy was the first to show that, after poisoning by

alcohol, this substance could be found in the ventricles of the brain, as well as in the brain-matter itself; and we are all aware of the fact, that fumes of alcohol are exhaled from the lungs even when only a small quantity of the fluid has been swallowed. The chief points that are new, which have been brought to light by the investigations of our authors, are the elimination of the alcohol unchanged through the medium of the skin, the kidneys, &c.; and its deposit in the tissues generally, It is true that Klenke had demonstrated the presence of alcohol in the urine and bile; but with this exception, physiologists had advanced the opinion that the secreting organs did not eliminate the substance.

"There cannot be a doubt of the great importance and value of the researches of M. Lallemand and his coadjutors; for, supposing their results to be trustworthy—and we believe them to be so—they establish beyond a doubt the fact that, at any rate, a portion of all ingested alcohol may go the round of the circulation, traverse the various capillaries of the body, and, without undergoing any oxidation whatever, be ejected from the system in the different secretions. This portion, therefore, cannot be concerned in building up the fabric of the body, nor can it by its combustion contribute to the maintenance of animal heat. This is surely an important conclusion to have arrived at. The weak point, however, in the arguments adduced against the value of alcohol as a respiratory food, is the small quantity of it which the experimenters have been able to extract from the various secretions. It is possible that, by more delicate modes of investigation, and by the use of more subtle tests, a much larger proportion may be detected; but we are inclined to think that, until some such result is obtained, physiologists will not be disposed to abandon their views as to the oxidizable nature of the substance."

ON THERAPEUTICS.

By Professor Brown, M.R.C.V.S.,
Royal Agricultural College, Cirencester.

(*Continued from p.* 319.)

ASTRINGENTS.

The similarity of the actions of tonics and astringents renders it necessary to distinguish clearly between the two classes, in order to anticipate the objections that may be raised against placing astringents in the second group, while tonics are allowed to remain in the first. Tonics, we have endeavoured to show, are opposed to the element "defect;" they restore the weakened energies, stimulate the digestive functions, and improve the secretions; locally, many tonic agents produce astringent effects upon secreting surfaces, but their characteristic action is excitant. Astringents, on the contrary, are distinguished by their power of decreasing

secretions and lessening the capillary circulation; they are, consequently, directly opposed to the element excess; in the course of their operation they improve the tone of relaxed membranes, and thus act as tonics, but only indirectly through the medium of their astringent properties; their characteristic action is to diminish secretion by causing contraction of the textures, and at the same time limiting the supply of blood and lessening the calibre of the tubes through which the secretion passes.

Internally and externally, all astringent agents operate in the same way, chemically affecting the fluids by coagulating their albuminous or gelatinous principles, thus retarding their flow, besides inducing a tense and contracted condition of the surface.

Therapeutically, astringents are indicated in a variety of diseases associated with excessive evacuation—in chronic diarrhœa or dysentery, in nasal gleet, in excessive discharge from wounds or ulcers, instanced in the different stages of grease, cankers, thrushes, quittors, fistulous wounds in any situation, and in hæmorrhage from small vessels.

The exhibition of astringent drugs internally, with the view of producing an action upon a part through the influence of the agent upon the system, is a mode of procedure open to question, as it seems scarcely probable that the medicine will circulate unchanged until the desired spot be reached; indeed, it is utterly impossible that it should do so; but, by its coagulent effect upon the blood, the consistency of that fluid may be so modified that excessive exudation is prevented; nevertheless it may be admitted, as a rule, that the action of astringents is most decided and most beneficial when directly induced by contact with the diseased surface, and, save in very few cases, such contact may be readily effected by the aid of powder or solution.

The most powerful astringent agents are tannin, matico, catechu, and alum. The milder drugs are Armenian bole and carbonate and oxide of zinc, all of which may be applied as dry powders, or as unguents. Internally alum, catechu, and tannin are most commonly exhibited; matico leaves, Armenian bole, and the oxide of zinc being generally limited to external use.

In the employment of astringents it is necessary to recollect that they indiscriminately arrest secretions and discharges, without reference to the condition of the part from whence the secretion flows; it becomes, therefore, important to ascertain whether the flux is of a nature to allow of the effects of astringent agents without danger. When the

secretion is consequent upon congestion or inflammation, to arrest it would be exceedingly dangerous, but when it owes its origin to relaxation of the vessels, unassociated with inflammation, the action of an astringent is particularly beneficial.

In some kinds of diarrhœa, which resist the ordinary remedies, astringents are indispensable, but only in small doses, as fatal constipation may result from a too energetic action; when the attack is acute or inflammatory, these agents are not admissible, for very obvious reasons; nor, indeed, in any similar case of excessive secretion resulting from inflammation can we employ agents which arrest the discharge of fluid from the overcharged vessels; but when the acute stage has passed, and the secretion still continues in consequence of a relaxed state of the vessels or the continuance of chronic irritation, astringent applications may be used with safety and with every probability of success.

In diarrhœa occurring in an animal suffering from debility consequent upon previous disease or severe depletive treatment, the continuance of the flux inevitably produces most grave results; hence to arrest it at all hazards is absolutely necessary, and among the measures by which this object may be attained astringents are the most certain in their effects; given in small doses, to avoid any unnecessary local irritation, they diminish the secretion from the intestinal membrane, and prevent the collapse which the excessive evacuation would otherwise cause. The remedies required in the treatment of the original disease will not be superseded, as the astringent treatment is only a temporary method of meeting a sudden emergency of the case.

In chronic mucous discharges, for example, nasal gleet or continued discharge from the vagina after parturition, solutions of alum have been found effective; tannin, however, is a more powerful agent, and one which deserves more consideration than has been accorded to it; internally, it may take the place of catechu with advantage, as no constipation results from its use. In the form of fine powder its potency may be regulated as desired by incorporation with any proportion of sugar or chalk; it may be blown up the nostrils or mixed with water to form a powerful astringent injection. For the purpose of moderating the discharge from suppurating or ulcerating surfaces, astringents are sometimes desirable; they act by causing contraction of the diseased textures, and by diminishing the supply of blood; besides, to a certain extent, lessening the nervous excitement. For this purpose dry powders are desirable. Tannic acid, or a mixture of Armenian bole and alum, will be found unfailing. In

cases where sloughing has commenced after firing, we have observed the benefit that has followed the persistent use of a dessicating powder of alum and Armenian bole; in many cases the unhealthy condition has ceased, and much of the surface which we considered hopelessly loosened has participated in the general restoration.

As a simple method of arresting hæmorrhage from small vessels, astringents are valuable; when the application of cold has not sufficed to prevent the flow of blood, the powder of matico, or the leaf, applied with the under side to the bleeding surface, at once stays the oozing; it is even asserted that bleeding from large vessels may be thus arrested.

The common resort, however, to powerful astringents in every case of simple diarrhœa is to be reprehended as unnecessary, when mild alkalies will be more effective and more safe. Astringents, from their potency, are only justifiably employed when excessive evacuation threatens extreme consequences, and even then they are only to be exhibited with caution.

THERAPEUTIC ACTION OF THE THIRD GROUP.

The power of inducing some molecular change in the constituents of the animal body probably belongs, in a greater or less degree, to all medicinal substances; but the obvious indication of such change is seen in only a few instances. In the course of diseased action these molecular changes are frequently very marked, both in the solids and fluids of the body; structures and functions are so entirely altered as to lose their ordinary characteristics. The term "perversion" is applied by the pathologist to express the occurrence of such derangements.

In the course of medicinal action we observe instances of such marked change of structure and function, that the use of the same word may, without any qualification, be admitted. The agents which produce these peculiar effects belong to three distinct divisions—antacids, caustics, antiseptics.

Antacids physiologically alter acid secretion, and render them neutral or alkaline.

Caustics produce even more definite changes, destroying the vitality of the textures and forming new combinations.

Antiseptics modify the products of decomposition, destroying fetor by causing new compounds to arise from the union of some of their constituents with the elements of the secretions.

Thus all the subdivisions of the third group are composed of agents which induce a change in the organisms in which they operate, and justify a comparison between their effects and those changes of structure and function expressed by the term "perversion."

As therapeutics, the agents of the third group are applicable to conditions the opposite of those which they produce upon the healthy body, their effects are generally very marked, and quickly apparent; but as the various agents counteract the *effects* of disease rather than remedy the *original* derangement, their action is temporary, rendering it necessary to continue their employment so long as the cause of the perversion exists. For example, an acid secretion or a putrid discharge may arise from some disease in the system or in the part. Antacids and antiseptics immediately alter the character of the discharge; but as the cause of the morbid condition continues, so a new supply is furnished, and another application becomes necessary until the actual disease ceases, or is removed by treatment. Thus, medicines of this group are frequently required as adjuncts to a more general therapeutic treatment, although, as we shall see, they sometimes act as curative agents when the peculiar condition of the part survives the original cause, and becomes a merely local derangement, whose removal will follow the action of the medicine that has the property of inducing the opposite state. In this way antacids may permanently cure a simple diarrhœa resulting from a change in the function of the intestinal membrane, while they would only temporarily relieve another case of the same disease, originating in mal-digestion, which might be connected with a tendency to the formation of acid products. In the course of our remarks it will be apparent that the same reasoning applies to all the medicine of the third group.

ANTACIDS.

The physiological action of these medicines is directly chemical, and, so far as the question of affinity is understood, perfectly simple. That certain agents, possessing opposite properties, have a tendency to combine together, forming compounds whose properties are not the mean of the two or more constituents which have united to form them, is a proposition with which the tyro in chemistry is perfectly familiar. In the operation of this law, we find two very active agents when in combination to be perfectly negative or neutral.

Antacids are by necessity alkaline in their reaction, and hence possess the peculiar tendency to unite with acids, forming salts of various kinds, and of different properties,

soluble or insoluble, active or passive, in the organism, according to the nature of the acids and bases of which they are composed. However simple and safe the operation of the antacids, their exhibition calls for care and consideration.

1st. It is necessary to determine the presence of acid secretions, as the consequence of disease, because the safety of the operation of the antacid is owing in a great measure to the presence of an acid that will at once attack it. The consequence of an injudicious use of alkalies in the absence of any undue acidity may be readily imagined; the normal acid secretions are necessarily modified, and the integrity of the blood impaired.

When the diagnostic symptoms of acidity are obscure, the test-paper at once decides the question, and indicates at the same time, by the intensity of the reaction, what degree of acidity may be present. Acid secretion is so common in cases of diarrhœa and mucous irritation that we are in the habit of assuming its existence, and dispensing with the simple test which would leave no room for doubt, and obviate the necessity for speculating upon the medicine best suited to the disease.

2d. The ultimate results of antacid treatment are of immense importance, as far as the selection of the agent is concerned, for the reason already given, viz., the formation of salts distinguished by various negative and positive properties. The agents mentioned in Morton's 'Pharmacy' as antacids are carbonates of lime, magnesia, potassa, and soda, and soaps. The carbonates of these alkalies are less energetic in their action than the alkaline bases alone, and therefore are safer, while the weak affinity which combines them to their acids renders them equally effective as antacid medicines.

Excepting the soaps, which are among the mildest antacids, the various drugs are tolerably uniform in their degree of alkalinity; but the salts of lime and magnesia are insoluble, with few exceptions, while the salts of potassa and soda are universally soluble: and consequently, when long-continued antacid treatment is necessary, soda or potassa is to be preferred to the lime or magnesia, although in the case of the latter drug, some purgative salt is frequently formed by its union with the acids of the diseased secretion, and thus any accumulation of deposit is thereby prevented; but lime-salts formed in the system are likely to accumulate if the agent be exhibited for any lengthened period, although the occasional employment of chalk preparations is not commonly productive of mischief. The ordinary chalk mixture is a very valuable formula for simple diarrhœa; magnesia we

have found effective in acidity of the fluids in the stomach; but, in the treatment of chronic derangements which require antacids, we have invariably given the salts of potash or soda, which are equally active, and free from any objection on the score of the insolubility or medicinal effects of the compounds formed by their decomposition in the system.

Externally antacid solutions are useful in allaying the irritation present in pruritus, or any of the numerous forms of surfeit; their influence depending upon the neutralizing of any acid secretion, and probably still more upon their power of softening the cuticle, and removing any irritating particles from the surface.

CAUSTICS.

Agents which decompose or destroy the textures to which they are applied are termed caustics or escharotics; they act principally by removing the fluids from the textures by virtue of their affinity for water; the formation of a dry scab or eschar consequently follows almost immediately upon the employment of the caustic, the structure is disorganized, and a mass of dead matter left in its place, to be ultimately removed in the course of the suppurative action which succeeds.

Caustics are divided by Mialhe into "coagulants" and "solvents."

Coagulants are those which form with the tissue a solid eschar; such are the mineral acids, nitrate of silver, sesquichloride of antimony, and chloride of zinc, none of which undergo absorption, or produce any medicinal effects upon the system. Sulphate of copper, bichloride of mercury, nitrate of mercury, form at first a solid eschar, which ultimately is dissolved in the fluid of the part, and in this state may produce decided effect upon the organism.

Solvents, such as caustic potash and arsenious acid, occasion the formation of soft eschars they are consequently readily absorbed; and, in the case of the arsenical preparations, particularly require great caution in their employment. The actual cautery, as the hot iron is termed, differs in its action from the potential cautery, as the various caustics are called, as it forms no combination with the textures, but merely dissipates the fluid portions, and leaves an eschar of carbonaceous matter upon the surface. Subsequent to the formation of the eschar, inflammation occurs in the surrounding living structures, the dead part is detached and thrown off by the suppurative process; granulation and cicatrization complete the reparative action, and according to

the amount of substance lost or destroyed will be the contraction of skin, and extent of the permanent blemish.

The constitutional effects of caustics depend upon the local excitement which they occasion being sympathetically extended, inducing the symptoms that are ordinarily expressive of pain; in cases of absorption of the caustic agent, the characteristic action of the drug is developed, sometimes to a poisonous extent.

As therapeutics, caustics are opposed to the development of perverted or depraved textures or functions, as in fungous granulation, morbid growths of all kinds, in fustulous wounds, and in perverted nervous action in the form of morbid sensibility. The removal of excess of healthy or diseased tissue is effected by the caustic with certainty, and usually with safety, as no hæmorrhage follows the separation of the slough, while it can be applied to a surface which presents no elevation of sufficient extent to justify the use of the knife. The cases calling for the use of caustics are excessive granulations, which may be controlled by the occasional sprinkling over them of the sulphate of copper in fine powder; or by the judicious use of nitrate of silver round the edges of the wound sufficiently to allow the advance of the integument by successive steps. For the destruction of warts which are too extensive, or too small, or otherwise inconveniently situated for the knife. Arsenic, mixed into a paste with honey, we have found very effective; a small point of the excrescence is made to bleed, and a little of the paste applied; the death of the whole mass follows, and by sloughing the entire growth is removed.

In the treatment of wounds which present an unhealthy surface, solutions of sulphate or chloride of zinc, of various strengths, will rectify the morbid condition. For the destruction of fungous growths and the hard fibrous or cartilaginous lining of sinuses, none but the most potent agents are to be selected. Chloride of zinc, bichloride of mercury, and the undiluted mineral acids, are severe but effective remedies, in such cases as "canker" in the foot, "foot rot," "foul" in the foot, and "quittor." During ulceration, and in cases of extreme sensibility of wounded surfaces, and even in the same condition present often in irritation of the skin without any abrasion, a strong solution of nitrate of silver, is of marvellous efficacy; sponged over the part it lessens the nervous excitement, diminishes pain, and induces a healthy circulation; among caustics none is more controllable nor more perfect in its action.

Caustics, indeed, as a class are of extensive application. Whenever it is desirable to alter the physical or chemical condition of a part of the organism, to destroy diseased

deposits, to control the process of reparation, to obliterate sinuses, to rectify perverted nutrition, or to diminish abnormal sensibility, their value will be at once appreciated.

(*To be continued.*)

THE VETERINARY PROFESSION.

By R. H. Dyer, M.R.C.V.S., Waterford.

Another session has terminated, and it is seen that the London College has launched not less than forty-two new members into the field of veterinary science; Edinburgh has furnished thirteen, in addition to seven from the New College. On looking to the following page or two of the last number of *The Veterinarian*, we also find no less than thirty-six persons holding the Highland Society's certificate; nine or ten of whom are, however, legitimate members of the profession, having passed the Board of Examiners nominated by the Council. These names therefore appear in duplicate. The grand total thus seems to be eighty-eight. These gentlemen are now seeking the suffrages of the public as veterinary surgeons; some, doubtless, in one capacity, and some in another; or, in other words, a few will be content to associate themselves with veterinary surgeons in full practice, whilst others will at once embark upon the ocean of life, and take their stand as legalised veterinary surgeons, soliciting favours where they can be best found.

With schools such as these one would feel disposed to think they could furnish the public with a sufficient number of practitioners, without adding another to its list, and that a college too. We have recently been informed there is to be a college started in Dublin, under the patronage of the Royal Dublin Society. Right glad should we be to see established schools for promoting the education of the *people* upon veterinary subjects; but I am far from believing another college is *necessary* for students of veterinary medicine. I have resided in Ireland twelve years, and I may state without, I hope, being considered vain, that I have generally kept my eyes open, not to my own interests merely, but to the wants and necessities of *others*. I have long and anxiously sought *in vain* to establish a "*cattle practice*" in this country. I have proposed every sort of plan in order to induce owners of cattle to employ a qualified man. I have gone so far as to offer to see cases

gratuitously—merely charging for medicine I have tried by writing prescriptions, and making no charge at all, allowing the people to procure the medicines at the shop of the druggist, but all to no purpose. Then it will be asked, What is done in Ireland with the poor cattle when suffering from disease? I will reply by relating in simple, unmistakeable language the means had recourse to to alleviate their sufferings.

In the first place, I would state that there exist peculiar fancies with reference to a certain kind of water, commonly designated *holy water*, and which is used to a very large extent by the country-people. In the next place, we have in this county the murrain-stone, in the possession of Lord Waterford, found at Jerusalem 500 years ago. This is a specific (after having received the priest's blessing) for all kinds of diseases. I have seen this talisman or charm, and have handled it; its appearance is like a ball of glass, and a little larger than a racket-ball. In the third place, we have the "herd," a man who advertises himself thus—"Understands the treatment of diseases, both of cattle and sheep, and is a good butcher." By referring to the 'Irish Farmer's Gazette,' it will be seen that these kind of advertisements often appear. Finally, I can assure my readers that those who farm largely prefer to hire a herd who undertakes the management of cattle both in health and disease, than to employ a veterinary surgeon; therefore, if what I have stated be true, it may well be asked what need is there of a supernumerary veterinary college in Dublin? I am of opinion that the people must be educated before the plan will succeed. In this county there are but *two* veterinary surgeons, and they are both residing in this town. In the adjoining county, Kilkenny, there are also two. In Wexford none. Tipperary has but one, and so on. This, I think, speaks volumes. In Clonmel, county Tipperary, there were two, one of whom died a few years since, and no other member of the profession has thought it worth his while to take his place. It seems that all through this country the same feeling exists. If the Royal Dublin Society, or any other, would invite the people to hear lectures upon the management, &c., of cattle, so as to make the thing popular, then, in all probability, there would be some prospect of the success of such an undertaking as a new veterinary college. Assuming that they succeed in building a college, and fifty young men enrol their names as students, pass an examination, obtain the diploma of the college, and start in the world as practitioners of veterinary medicine, how are they to obtain a livelihood? If they have friends to support them for at

least five years, then, and not till then, can they have the remotest chance of success. During this stay amongst the people, they will have an opportunity of promoting education. I would earnestly warn all young men, prior to embarking, to look well to the future, and to make themselves certain of having funds to enable them to wait whilst they are opening the eyes of the farmers. No practitioner would hail with greater delight than I should the day when the millions are enlightened in these matters.

Messrs. Editors, I will conclude by placing before you a query. The following question was put to me the other day in Dublin, by a physician—"Suppose I sell this mare with the following warranty:—'*She is sound in wind, sight, and limb;*' could she be returned to me if the purchaser discovered a large sinus in the groin, believed to be by me (the physician) a psoas abscess?"

[In this case, as in numerous others relating to the soundness of horses, the correctness of the opinion on the law of warranty must rest on the time which had elapsed between the sale and the discovery of the disease. In the above case of abscess, the animal would, without doubt, be held to be unsound, unless a sufficient period had intervened to have given rise to the malady.]

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 259.)

Having given a description of the general characters of the natural order "Crucifera," we will now proceed to consider some of the more important plants belonging to it.

In doing so, none will be found occupying a more conspicuous position as an article of food for animals than the *turnip*. No plant probably has received greater attention from the agriculturist, and in none, perhaps, have his efforts been more crowned with success. To describe all the varieties of this plant, which have been brought into cultivation, would fill a volume, each having its admirers, as yielding a large supply of valuable food. I shall therefore be content with giving a brief description of the botanical characters, &c., of the two original plants from which most, if not all, the varie-

ties in cultivation have been obtained, viz., the *common white turnip* and the *Swedish turnip*.

They both belong to the tribe *Brassica*, which has the following distinguishing characters, viz., *pod* two valved (with a sterile or one- or several-seeded beak), *seeds* in a single row, *calyx* erect. The name is derived from the Celtic *bresic* (modern Gaelic *praiseach*), a kind of cabbage, or rather pottage made of it. (*Hooker and Arnott.*)

Brassica rapa (common white turnip). Root orbicular or oblong, fleshy, radical leaves lyrate, scabrous, not glaucous, lower stem-leaves incised, upper ones cordato-ovate, acuminate, amplexicaul smooth. (*Hooker and Arnott.*)

In this somewhat insignificant-looking plant, which is found growing wild in the hedgerows and waste places in many parts of the country, few would recognise the original source of nearly all our common white turnips. It is in its natural state a biennial, but this is much interfered with when brought into cultivation. It varies much in height, according to the state of the land upon which it is grown; and flowers about April or May, having yellow flowers. The large bulbous part of the plant, commonly called its root, is in reality its underground stem. The general characters of the turnip are sufficiently familiar to us all, so as not to need a minute description. The bulbs are exceedingly valuable as food for animals, especially sheep, although not to the same extent as the Swedish turnip; they are also much prized for culinary purposes, and in times of scarcity prove a valuable source of human food, when mixed with flour and made into bread. This was brought to bear in this country during the years 1629 and 1630, and also during the famine in Ireland. The following is an analysis of the common white globe, by Dr. Voelcker:

Water	90·430
Flesh-forming substances	1·143
Fatty substances	not determined.
Sugar, pectin, gum, &c.	5·457
Woody fibre	2·342
Inorganic matters (ash)	0·628

From the above it will be seen that it contains a very large per-centage of water. This fact should be constantly borne in mind by the agriculturist, so that other more solid material should be given to counteract the injurious effects that plants containing so much water are apt to produce, such as sanguineous ascites, &c., &c.

Brassica campestris (*Swedish turnip*).—*Root* fusiform, slender, and annual in the wild plant, often turnip-shaped and bien-

nial in the cultivated one; *stem* trispid below, *flowers* yellow, *pod* cylindrical or obscurely four-angular, *seeds* forming slight prominences, beak awl-shaped, striate sometimes, with a single *seed*.

Apparently the origin of the Swedish turnip of our agriculturists, and in Scotland it has never been found except where the Swedish turnip has been previously cultivated. (*Hooker and Arnott.*)

This plant, from which it is generally supposed all our varieties of Swedish turnip have originated, was introduced into this country from Germany about the middle of the last century, since which time, under the influence of agriculture and chemistry, it has become one of our most valuable plants, as yielding a very large supply of food for our domestic animals. It resembles the white turnip in many of its general properties, but surpasses it in value in nearly all. It flowers in June or July, and its bulb has a specific gravity of from 20 to 25 per cent. more than the common turnip, and contains a much larger quantity, weight for weight, of saccharine matter. "Half a pound of the Swedish turnip yields 110 grains of nutritive matter; the same quantity of the garden turnips yields only 85 grains." The following is an analysis of the Swedish turnip by Dr. Voelcker:

Water	89·460
Flesh-forming substances	1·443
Fatty matters	not determined.
Sugar, pectin, gum, &c	5·932
Woody fibre	2·542
Inorganic matters (ash)	0·623

Turnips are usually consumed as food by sheep and oxen, although in some instances they have been given to horses, both in a raw and boiled condition, and the animals so fed have been said to gain flesh very rapidly. The seeds of the turnip are very small, and some idea of the enormous increase in material may be formed from the following statement. "An ordinary or average field turnip, of the kinds most commonly cultivated in Britain, weighs about 6 or 7 lbs., and one of a larger variety, grown under the most favorable circumstances, weighs from 20 to nearly 30 lbs." A calculation has been made that one ounce of turnip seed contains from 15,000 to 16,000 seeds; that therefore each seed weighs only about a 15,000th or 16,000th part of an ounce; and that when developing itself into a plant, whose cauline bulb has an average weight of about 6 or 7 lbs., it must, on a supposition of uniform increase of substance during the period of growth, acquire fifteen times its own weight in a minute; and by an

actual experiment made on peat soil, it was found that turnips, during the period of their growth, made an average daily increase of 15,990 times the weight of the seeds from which they sprang."

(*To be continued.*)

EFFECTS OF THE BITE OF A SNAKE ON MAN, THE HORSE, AND A DOG.

Communication from "A Subscriber."

India; *March 12th*, 1861.

Gentlemen,—Cases such as the following are, comparatively speaking, of such rare occurrence that I doubt not you will deem them sufficiently interesting for insertion in the pages of the *Veterinarian*.

On the 10th inst., about 8 a.m., my farrier-major rode over in a hurry to report that a troop-horse had just been brought to hospital in consequence of a snake having bitten him in the mouth. I went to see the horse at once, and on examining his mouth found that the snake had bitten him in the centre of the tongue, about three inches from its tip. The tongue and lips were *then* considerably swollen, and the former of a deep-blue colour. The accident had happened about half an hour before I saw the horse. I immediately scarified the wound very freely with a lancet, and applied Liquor Ammon. to it; at the same time I administered a large dose of it internally, and had the horse moved about, as he showed symptoms of drowsiness. The local application of Liq. Ammon. was repeated several times during the day, and a dose of Ammon. Sesquicarb. administered every quarter of an hour, for three hours afterwards. In the afternoon, however, the animal became worse; his breathing was accelerated; the pulse quick and full; the mucous membranes injected; expression of face anxious, and he moved about in his stall very uneasily, sometimes running his head into a corner, at others backing his tail into one: this stage was succeeded by a comatose one. I had diffusible stimulants administered, both by the mouth and per rectum, but the patient gradually got more stupid until he could not be kept on his legs, and he died quietly and without a struggle at 3 a.m. the next morning, that is, in twenty hours from the time he was bitten. I ought to mention that there was constant hæmorrhage from the tongue and *mucous membrane of the mouth* (buccal membrane) during all the time the horse was ill.

The post-mortem examination revealed nothing particular beyond injection of all the mucous and serous membranes, and slight but general congestion of the vessels of the thoracic and abdominal viscera.

The snake that had bitten the horse was shown to me. It was about two feet in length, and some two inches in circumference at its thickest part, with a wide, flat head, and in colour white along the belly, and mottled gray down the back and sides; in fact, one of the snakes which are very common in this part of India. The reptile had crept in among the grass placed before the horse, and had been taken into his mouth while feeding. It was crushed and killed by the horse's teeth, but not before it had given the fatal bite.

In August last a dog of mine was bitten in the face by a snake, exactly the same kind as the one above described, but a little larger. I happened, however, to be present at the time, and *instantaneously* scarified the wound, and applied and administered brandy until the arrival of the Ammonia for which I sent, when I pursued the same treatment as in the case of the horse. The dog is now alive, but it was very nearly dying at the time. It became painfully thin and emaciated, and could not eat anything for days after the bite. I was ultimately obliged to have it spoon-fed with arrow-root, broth, &c., to recruit its strength. It is now as fat and jolly as ever it was.

During the month of July last a syce (native groom) of mine was bitten in the fourth toe of the left foot by a snake of the same kind. He, like a true native, at once squatted down on the ground, began to howl and cry, and resigned himself to "fate." I, however, got four other men to carry him off to the hospital at once, where he was immediately attended to, and treated much in the same way as I treated the horse and my dog. The man recovered, and is now all right, but he, like the dog, became a perfect skeleton in two or three days after being bitten.

In both of these latter cases there was incessant passive hæmorrhage from the wound itself, and from the gums and mucous membrane of the mouth, and also occasional vomiting of blood: this state of things lasting for four or five days.

If, gentlemen, you or any of your readers can suggest a course of treatment likely to be successful in such cases as the above, I, for one, shall feel much obliged. You see I was successful in the case of the dog, where no time was lost in applying remedies, but in that of the horse half an hour had elapsed before anything was done.

As a proof of the rapidity with which the poison acts, I may tell you that in fifteen minutes from the time my dog was bitten her head had grown to twice its proper size, and she became extremely languid and drowsy.

EPILEPSY IN A MARE.

By J. Harrison, V.S., Brough, Westmoreland.

On the 17th of April, 1861, my attendance was requested to see a brown mare, rising six years old, the property of Mr. Wm. Cannon, Burtergill, Warcop.

On my arrival, about 8 p.m., I found her presenting the following symptoms. She was lying down in a loose box, totally unable to rise; her extremities were violently convulsed, and during the paroxysms, which were nearly continuous, she threw herself from one side of the box to the other, and sometimes rolled over; the head and neck were also spasmodically affected, and a rotatory movement took place from one side to the other; the eyes were amaurotic, and rolled like two balls in their sockets; the pulse was slow and full; the extremities warm; the respiration normal.

Upon inquiring into the previous history of the case, I learnt from Mr. Cannon that the mare had shown symptoms of lameness during the week previous, first in the off fore limb, and then in the hind one; but as it seemed only of a temporary nature, and she continued to do her work, they took little notice of it; but on the morning of the 17th, as Mr. Cannon's servant was ploughing with the mare, she suddenly dropped to the ground, struggled violently for a minute or two, and then got up, staggering much in her gait.

This he thought arose from some injury to the back; she was therefore removed out of the plough, taken home, and placed in a loose box, when the symptoms became gradually worse until the evening, when I first saw her.

Along with the rest of Mr. Cannon's horses she had been fed on hay, cut chaff, oats, and oatmeal-husks for some time.

From the extreme violence of the paroxysms it was evident she was a dangerous subject to come into close contact with; consequently I had a halter put on, and tied her up to a post. I then fastened a rope to each fore fetlock, threw the loose

ends out behind her, and caused an assistant to pull at them in order to keep her fore limbs under, so that she could not rise sufficiently high to throw herself to do any injury to any one. I then abstracted blood from the jugular vein to the amount of about six quarts, when the pulse became quicker and smaller. I then gave the following in the form of draught:

℞ Aloës B.B., ℥j;
Ammon. Sesquicarb., ℥j;
Aquæ Puræ, Oj;

and threw a few pailfuls of cold water over her head, in the form of douche. By this time the symptoms were somewhat relieved; her head and eyes had become more steady, and the spasms were leaving the extremities. I now applied a blister to the cranium, placed Hydrarg. Chlor. ʒj on her tongue, had her well bedded up with straw, a sheet thrown over her, and left orders for her to be kept as quiet, and the place as dark, as possible.

Next morning, the 18th, I visited my patient early; found her on her legs eating a little hay, and was told she had risen during the night. She was free from spasms, the eyes clearer, and not so amaurotic as on the previous evening; the pulse 32 and rather full, extremities cold. I gave her—

℞ Ammon. Sequicarb., ʒiv;
Ol. Palmæ, q. s. Fiat bol.

Had her legs bandaged, and ordered her to be fed on bran mashes throughout the day. Quietude enjoined.

April 19th.—The physic has operated moderately, the appetite is rather improving, both the extremities on the off side are extremely cold, whilst the near ones are quite warm; when made to move she appears to drag the off limbs, which gives her an unsteady gait, a circumstance I attributed to a disturbance of nervous influence, as all the rest of the abnormal symptoms appeared to have left her. Ordered the legs to be well rubbed and bandaged with flannel.

21st.—I was again requested to see her, as she had had a relapse, and during the night had been throwing herself about. Her eyebrows were much bruised and swollen, through coming in contact with the walls of her box. When I arrived I found her free from spasm, but she appeared to have lost a great deal of power of self-control, as she reeled about her box, and could scarcely keep on her legs; the pulse was slow,

about 32. I repeated the dose of Sesquicarb. Ammonia, and ordered—

℞ Zinci Sulph., ʒiss;
Pulv. Nux Vomicæ, ʒvj;
Pulv. Rad. Gent., ʒij;
Misce et divide in pulv. vj, cap. j omne die;

in a bran mash.

Under this treatment most of the abnormal symptoms gradually left her: she was taken to work again about the 1st of May, and has continued to do well ever since.

I saw her on the 13th of May, when she had very much improved in condition, but there was still a visible trace of stiffness or dragging of the off limbs, more particularly the hind one, and when first taken out of the stable a slight quivering or twitching was to be seen about the rectus muscle. To be brief—for I am afraid I am trespassing too much on the pages of your journal—in explaining the symptoms observed in this case, I think it will appear tenable, according to physiological research, that the immediate cause of epilepsy in this case was congestion, causing irritation of the sensible structure of the encephalon; that the parts more immediately involved were the corpora quadrigemina, crura cerebri, pons varolii, and medulla oblongata; the third, fourth, and sixth pairs of nerves being all principally motor, and taking their origin from those parts; and the fact of those muscles under their immediate influence being convulsed, and also as to the second pair arising from the thalami nervorum opticorum, and winding round the crura cerebri, which were temporarily paralysed, is strong suggestive evidence on this point. As to the exciting cause, I must decline to offer an opinion, but shall leave your readers to form their own from the history, symptoms, and treatment of the case.

CANCEROUS GROWTH FROM A HORSE'S EYE.

By J. Cotton, Student of Veterinary Medicine, Stourbridge.

The following case came accidentally under my notice while visiting a patient at the same place where the horse in question was located.

History.—The subject was an aged gray gelding, of the light cart-horse breed, the property of a small farmer near

Stourbridge. He had been in the present owner's possession for more than three years. At the time of his purchase he was perfectly free from any abnormal growth or tumour whatever, but, to use the owner's expression, he had lost his near eye, which bore the appearance of having been knocked out.

About ten months before his death a small tumour or enlargement was observed springing up, as it were, out of the orbital cavity; but no notice was taken of it, and consequently no means were resorted to for its removal or to prevent its growth, so that it gradually increased in size till it protruded externally and covered a great portion of the near side of the face, causing much absorption of the surrounding osseous structure, especially the lower part of the os frontis, the orbital arch, and the os lachrymalis, becoming in ten months' time so disgusting a spectacle, and so painful to the animal, that it was deemed expedient to have him destroyed. Until within the last two or three months it had made no perceptible difference to his appetite, but latterly the pain from it became so great and produced so much irritation in his system generally, that the animal gradually lost flesh, while the constant drain on his constitution, from the cancerous discharge, tended considerably to debilitate and weaken him, so much so, indeed, that he became of no use whatever to his owner, who finally had him destroyed. I am sorry to add that the horse was killed without my knowledge, although I had expressed a wish to examine the tumour when he was dead. I was, however, able to obtain a little information respecting it, and the following is a—

Description of the growth.—When it was removed from the surrounding tissues, and on a sectional division being made through its structure, it appeared of a firm, solid, consistence, and weighed altogether about two pounds. There were several foul ulcerations in the integument surrounding the growth, discharging a thin, offensive fluid, which, running down the face of the horse, was a constant nuisance to him, and, indeed, to all who had anything to do with the animal. The disease did not affect sympathetically, or in any other way, the off or sound eye. The growth was of a highly vascular nature, and kept constantly cicatrizing over, but afterwards broke out again, presenting a foul, ulcerated surface. It was of an irregular shape, but the principal portion of it was externally of a rounded form.

Not being requested to do anything for the horse, no treatment of any kind was attempted so as to mitigate the disease

or remove the tumour, even had this been possible; but the novelty of the case excited my attention, and has induced me to forward you the facts relating to it.

VENTRAL HERNIA IN A MARE.

By J. R. Hill, Assistant to J. A. Hughes, M.R.C.V.S., Leominster.

I was requested by C. Vevers, Esq., of Ivington Park, near this town, to make a post-mortem examination of a mare that was found dead in the stable this morning, and which was said to be in foal.

On my arrival I found the animal had been skinned. My attention was first drawn to a protrusion of the intestines on the left side. The size of the rupture was about two feet. On inquiring I was informed that, before the man commenced skinning the animal, he observed a very large, as he thought, swelling, and as soon as the skin was removed from that part the small intestines, as well as the uterus containing the foal, protruded. There was a rupture of the uterus at the neck, which was so extensive that it was nearly through. There was, likewise, a large quantity of coagulated black blood in the pelvis, bladder, and uterus with the foal. The mare had always stood in the stable between two other horses, of which she was the master. She was found on her left side, and from the state of the straw where she had lain, it did not seem as if she had struggled much. To all appearance she was quite well the night previous, nor was there any mark of a blow on the outside of the skin or of hernia of the abdomen externally.

The mare's time to foal was not until the latter part of June or the beginning of July.

Facts and Observations.

FURTHER FACTS AND PARTICULARS RELATIVE TO PLEURO-PNEUMONIA IN AUSTRALIA.

THE *Melbourne Argus* states that after a few weeks had elapsed without any fresh cases of pleuro-pneumonia having been reported, many stockowners were beginning to think that the disease was extirpated, but it has now broken out in a fresh quarter, the Ovens district, and in a manner to show that the contagion must be widely spread. Full particulars have not yet reached town, but the officers of police at three different places made reports of the appearance of the disease almost simultaneously, and with truth, in regard to two at least of three localities. It was first noticed in working-bullocks belonging to a carrier's team, which had some months ago been running for a short time with cattle that have since been destroyed; and in another herd, not many miles away, and very much infected, two bullocks so ill as to be unable to travel were left by a carrier passing along the road. Thus, the danger from this source turns out unfortunately not to have been exaggerated, and any moment may bring us similar reports from other districts hundreds of miles apart. The bill authorising strict measures for the prevention of this disease has passed the Assembly, and will most probably be law in a few days, and not before it is required, for the utmost exertions will have to be used this winter to rid us of this destructive malady, if, indeed, it is to be banished from the country at all.

ELECTROLYTIC TEST FOR ARSENIC.

At a meeting of the Chemical Society, Professor Bloxam read a paper on this test for arsenic. In a former communication on the subject he had shown that when arsenical compounds mixed with diluted sulphuric acid were acted upon by the current produced from four or five cells, arseniuretted hydrogen gas was liberated from the negative pole; but that arsenic acid did not respond to this test, and that the presence of mercury interfered with it. The author now obviated the difficulties by adding a small quantity of sulphuretted hydrogen water to the liquid during its electrolysis. By this means a ring of tersulphide of arsenic, followed

by one of metallic arsenic, is readily obtained, both from arsenic acid and from organic substances containing arsenic, which have been destroyed by chlorate of potash and hydrochloric acid. The sulphuretted hydrogen, moreover, precipitates the mercury, and thereby prevents its interference. It also precipitates any antimony that may be present, whereby the contamination of the arseniuretted hydrogen with antimoniuretted hydrogen is avoided. The author found that when antimony and arsenic were present in an organic substance, clear evidence of both metals could be successively obtained. The product of the action of hydrochloric acid and chlorate of potash upon the substance was introduced into the decomposing cell, whereby antimoniuretted hydrogen was evolved free from arseniuretted hydrogen. Afterwards, on the addition of sulphuretted hydrogen, arseniuretted hydrogen free from antimoniuretted hydrogen was evolved. The author observed that, according to his experience, sulphuric acid, as a rule, could be obtained more pure than hydrochloric acid. Moreover, he had found various samples of caustic potash to be contaminated with arsenic. Sulphuretted hydrogen, prepared from diluted pure sulphuric acid and sulphide of iron, was found to contain traces of arseniuretted hydrogen.

HYDRATED SESQUIOXIDE OF IRON AN ANTIDOTE TO ARSENIC.

Fazole, of Venice, it is said, has lately experimented largely so as to ascertain the efficacy, or otherwise, of the sesquioxide of iron as an antidote to arsenious acid as a poison. To nineteen dogs arsenic was administered in sufficient doses to destroy life. To five of them none of the antidote was given, and all died. To the fourteen others the hydrated sesquioxide of iron was exhibited, and only two died.

Many years since, M. Bouley, V.S., Paris, experimented with these agents on horses, and out of fourteen to whom arsenic was given, and subsequently the sesquioxide of iron, only one horse died.

CHLOROFORM IN POISONING BY STRYCHNIA.

Dr. M. Scherppert, of New Orleans, publishes a case in which a grain of strychnia being accidentally swallowed, recourse was had to the inhalation of chloroform. The spasms, which were dreadful, were readily subdued by it;

but it was found necessary to keep the patient constantly under its influence for some hours, as much as six ounces of the agent having been used before the action of the poison had passed off.

CONDITIONAL STATE OF CARBONATE OF LIME IN WATER.

It is commonly stated that lime is held in solution in water, giving to it hardness, in the form of bicarbonate. Mr. E. J. Reynolds, however, avers that this compound does not exist, but what is so termed is merely a solution of carbonate of lime in carbonic acid—$CaO\ CO_2$ in CO_2. He adds there are many instances of an acid favouring the solution of a substance that is insoluble, or nearly so. Further, "there is no instance in chemistry of a bicarbonate being so loosely constituted as to lose one equivalent of its acid by mere exposure to the air. Even magnesia, which is known to exist as a bicarbonate, both in solution and in the solid state, loses only one fourth of its carbonic acid, and is deposited as a sesquicarbonate."

THE CYSTICERCUS CELLULOSUS TRANSFORMED WITHIN THE ORGANISM OF MAN INTO THE TÆNIA SOLIUM.

It will be remembered that M. Küchenmeister, a very patient experimentalist, endeavoured to prove this transformation first upon animals and subsequently upon a human being. In the latter case, the cysticercus, concealed in food, was given to a woman lying under sentence of death, 72, 60, 36, 24, and 12 hours before execution, when four young tæniæ were found in the duodenum, and six more in the remainder of the intestinal canal. Experiments were also made, some time back, by a young man under the observation of M. Leuckart, and by M. Humbert, when fragments were discharged two or three months afterwards. But doubts might be raised respecting all these experiments, especially as to the previous existence of any ova within the intestinal canal. M. Küchenmeister, however, had an opportunity, towards the latter end of 1859, as stated by the *Duetsche Klinik*, of renewing the experiment in conjunction with Dr. Siebenhaar. The first injection of cysticerci took place November 24th, 1859, and the second on the 18th of January, 1860. The prisoner was decapitated on the 31st of March, and at the autopsy it was found that half the cysticerci that had been

swallowed were transformed into flat worms, of which eleven presented mature segments. Some of the latter were still connected; the others were detached, and moved towards the lower part of the canal. There were eight other worms, which had not ripened as yet. All these parasites were comparatively small, the longest not reaching beyond five feet.—*The Lancet.*

DEATH OF THE ALPACAS IN PARIS.

THE Society of Acclimation of Paris having recently lost the whole of their alpacas and llamas by an epizootic disease, they have instituted measures to replace them by sending out a naturalist to South America to collect another pack, and also a flock of merinoes.

CURE FOR LOCK-JAW.

A FRIEND of mine, a gentleman of high standing in the county, on whose veracity I can depend (says a writer in the *Field* newspaper), related to me a few days ago an extraordinary instance of a valuable mare of his recovering from confirmed tetanus, by having recourse to means I never heard of being adopted before. The relating of the facts may perhaps be not uninteresting to some of your readers. The mare had been docked. A few days after the operation was performed, symptoms of lock-jaw presented themselves. The best advice was immediately obtained, but every remedy used proved unavailing, and death appeared inevitable. An idea suggested itself to the lady of the house (who, I believe, is famed for the kind and skilful way in which she dispenses medicines, especially to the poor of the surrounding neighbourhood) that a sudden severe shock might produce the effect of relaxing the nerves and muscles, now strung to the highest pitch in the poor suffering brute. A gun was loaded; the groom walked quietly to the mare's head, and discharged it close to her ear. The mare reared suddenly up, broke her halter, and fell backwards; got up, shook herself, at once commenced eating, perfectly recovered, is now alive, and has bred two or three fine foals since.

[It is not uncommon for these sudden shocks given to the nervous system to be attended with this effect. In one instance, related to us, a horse, affected with tetanus, was led out to be destroyed, when the blow of the pole-axe not being given sufficiently strong to destroy life, the result was a complete relaxation of the general muscular contraction, and the animal ultimately recovered.]

THE VETERINARIAN, JULY 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —CICERO.

ON PUBLISHING THE COLEMAN PRIZE ESSAYS.

WE agree with "Amicus," that it is in every sense desirable to devise some means by which publicity may be given to these essays, and we are glad, with him, to see that the governors of the College have determined thus to appropriate the esteemed professor's bequest, the only one, we believe, ever made to the institution or the school. Unquestionably it is gratifying to be told that the essays reflect the greatest credit on their respective authors, and plainly demonstrate the advantages that have resulted from the improved system of education of the veterinary student as introduced of late years.

But it may be said that this has been as much the result of necessity as of choice. All the other sciences are making rapid progress, and there is a needs be for ours participating in the onward march. It is a law in physics that motion being communicated to a body, all contiguous bodies receive an impression from it. It has been well said, that science at the present day has achieved glorious triumphs over the most formidable physical obstacles. The ocean has been spanned by navigation; continents intersected by railways; steam has multiplied a thousandfold man's labour, while he transmits his thoughts on the wings of lightning, rendered a docile servant to do his bidding.

Moreover, it must not be forgotten that this statement is made by parties not altogether disinterested. Nevertheless, we conscientiously believe it to be true—and we speak from experience—and, as a proof, may be permitted to refer, not only to the extended curriculum, but also to the assistance the student now receives, as compared with what he once did, in the publication of works connected with his profession. These, however, must yet be increased, and some urged to enter the list of authors who hold offices of high responsibility and honour as teachers. We know their abilities, and are

glad to see that lately Mr. Varnell has become one. We hail his advent with pleasure, and congratulate the pupils on obtaining this additional aid to their studies; but, at the same time, we sincerely hope it is but the precursor of a more extended work on his division of science, namely, anatomy; one to which he is capable of doing full justice. We are advocates for a division of labour, believing that thereby in science, as in all other manifestations of human activity, we arrive at discoveries and results which escape the mental vision of the man who is eager to embrace all sides of the horizon at once. Mr. Varnell's writings are not unknown to our readers, and their practical usefulness is duly appreciated by them.

Reverting to our subject, we ask would it not be as well if to others were given an opportunity of judging? We are told, "Knowledge should not be hidden. Nor can a man possess the gift of intellect without diffusing it around him. Nature herself is impressed with this law. Everywhere in nature stagnation is death; whatever stagnates dies. Like the water from heaven, when it falls upon the earth it fertilises it, and thence runs into a rill, leaping from stone to stone, laughing in the sunshine, rippling in the mountain breeze, and leaving behind it as it runs a line of verdure, beauty, and fertility. Look at the self-same stream if it runs into a hollow; if, instead of imparting its quickening virtue to all around it, it becomes dammed up and stagnant, what becomes of it? Its brilliant living lustre fades away, and so soon as it loses its power of motion a thick, green film forms over its silvery surface, and denies that it shall drink in the sunshine of heaven."

Again, will not the act of giving publicity to these essays awaken an emulative spirit among the rising members of the profession, which, in after years, will be attended with a corresponding beneficial influence; like the scratch made in the bark of the sapling, which time both deepens and widens?

We are aware it may be disparagingly said that they are merely the attempts of students, full of book-learning and quotations from all sources. We do not, however, happen to be of the number of those who contemn the efforts of the aspirant to fame, remembering the adage, "the boy is oft father

to the man." We would, therefore, hold out the hand of encouragement and support, and suggest, that should the "powers which be" not think fit to authorise their publication in any other way, liberty should be given to the successful essayists to do it in any manner they may deem most conducive to their own interests and that of the body of which they anticipate being members.

THE NEW METAL, CÆSIUM, OR SPECTRIUM.

It will be remembered that, a short time since, we referred to the discovery of this new alkaline base. Recently, by the application of that beautiful method of analysis—hereafter to be noticed by us—proposed by Kirchloff and Bunsen, this metal has been discovered in the London waters by the Messrs. F. A. and A. Dupré. Certain salts of it have likewise been stated by them to exist, as the carbonate, oxalate, and sulphate, these being insoluble in water. Likewise the chloride, which does not seem to be hygroscopic.

It may not be possible at present to say of what avail this discovery is. Comparatively little was, at first, thought of the development of the metals potassium and sodium by Sir H. Davy. By the aid of the last named, however, it is that aluminium, the metallic base of clay, has of late years been obtained in such considerable quantities, and applied to so many uses. In like manner, the singular substance gun-cotton was looked upon as merely a strange explosive compound, and its utility as a substitute for other substances of the same class more than questioned. We are now informed that its manufacture has been so much improved by the Austrian chemists that it constitutes a regular portion of the armaments of that country; while its projecting power being so much greater than that of gunpowder, and being also so much lighter, facilitates transport, and will soon take the place of this compound, and become of increased importance in war. We suppose that the like has obtained in Prussia, as we read—"At the artillery grounds near Berlin experiments have been lately made with a new species of gunpowder,

which seems to possess some advantages over that in ordinary use. It is of a yellow colour, and while producing greater effect with the same quantity, has the valuable property of not fouling the barrel, even after numerous discharges." But that which interests *us* most is the fact that a solution of gun-cotton is used as an adhesive agent in the cure of wounds, under the name of collodion, which is well known to be also largely employed in the arts. Similar observations might be made in reference to artificial parchment, produced by the action of dilute sulphuric acid on unsized paper. The satirical *cui bono?* would be less frequently given vent to were men more conversant with historical science. It is their ignorance which, in the eyes of many, renders them so seemingly wise—wise alone in their own conceit—and we know what Solomon says of such.

The editor of the *Chemical News* on this metal says:

"Since the announcement by Messrs. F. W. and A. Dupré of the existence of a fourth member of the calcium group of metals, which they state they have detected by means of the spectrum, I have searched various private memoranda on the subject of the spectra given by artificially coloured flames, which I have been investigating at intervals during the past eight years, and have found recorded that the calcium spectrum occasionally yielded me a blue line, not due to potassium or strontium, and in the position indicated by these gentlemen as belonging to their supposed new metal. I have, therefore, re-examined specimens of lime-salts with a more perfect spectrum apparatus, and find that all of them give me a blue line, situated, as described by the Messrs. Dupré, 'between the lines of Srδ and Kβ, about twice as far from the former as from the latter. In brightness and sharpness of definition quite equal to the line Srδ.'

"No methods of further purification or treatment by fractional precipitation, to which I have submitted some perfectly clear and colourless Iceland spar and other very pure lime compounds, having succeeded in my hands in producing a salt which would exhibit a spectrum in which the brilliancy of this blue line was in the least degree either diminished or increased in proportion to that of the other red, yellow, and

green lines, I am confirmed in my opinion that this line forms an integral part of the calcium spectrum. The account of the authors' process for the separation of their supposed new metal from the deposit formed on boiling the water seems also to be quite inadequate to separate lime from an accompanying similar metal.

"Experimentalists in this new branch of chemical analysis should be warned against relying too much upon the chromo-lithographic drawings of these spectra, published in the *Philosophical Magazine*. Setting aside the differences in the appearance of a metallic spectrum, which are caused by variations in the intensity of the light and in the diameter of the slit, any person who has once seen these brilliantly coloured bands through a good instrument will be convinced of the utter hopelessness of any coloured copy, more especially when done by a lithographic process for the purposes of book illustration, being more than a very distant resemblance of the real object. Messrs. Kirchhoff and Bunsen's description and illustrations are excellent as far as they go, but they by no means exhaust the subject. An attentive observer will easily discover lines and other phenomena of which they have made no mention, and which ought certainly to be included in any drawings which profess to represent these spectra with any degree of accuracy. I am at present engaged in preparing such drawings, and will publish them as soon as completed."

In the *Journal für prakt. Chemie* it is likewise stated that Bunsen has discovered this new alkaline metal in the waters of several mineral springs. It exists in them, he says, together with potassium, sodium, and lithium, and its presence may be shown by the spectral analysis with the greatest facility, although only a few milligrammes are contained in several kilogrammes of the material. The author gives only a very brief preliminary notice of the new metal, promising a more extended investigation. The chloride may be distinguished from the chlorides of sodium and lithium by the yellow precipitate which it gives with chloride of platinum. It is distinguished from potassium by the solubility of its nitrate in alcohol. The vapours of the compounds of this

metal, when heated so as to become luminous, give an extremely characteristic spectrum, which at the same time exhibits the remarkable simplicity of the spectra of the other alkaline metals. Its spectrum consists of only two blue lines—a weaker line, corresponding with the blue strontium line, and another which lies only a little further toward the blue end of the spectrum, and which vies in intensity and sharpness of definition with the red line of lithium.

Extracts from British and Foreign Journals.

ON THE COLOUR-TESTS FOR STRYCHNIA, AND THE DIAGNOSIS OF THE ALKALOIDS.

Being the substance of part of the Croonian Lectures for 1861, *delivered at the Royal College of Physicians.*

By William A. Guy, M.B. Cantab., Fellow of the College, and Professor of Forensic Medicine, King's College, London.

The observations which I am about to make on the colour-tests for strychnia formed part of the three Croonian Lectures on Tabular Analysis, given at the College of Physicians at the end of February and beginning of March of this year. In those lectures, one form of tabular analysis was illustrated by a table of the alkaloids, and as the construction of the table grew out of a series of experiments on strychnia, and especially on the colour-tests for that important poison, it was necessary to enter into some details respecting those tests. The questions which I proposed to myself for solution were the following:

1. The best form and mode of application of the colour-tests.
2. Of the colour-tests, which is to be preferred?
3. Are the colour-tests, or is the selected test, open to any serious objection?
4. Is it possible by means of the colour-tests, or by any simple modification of them, to distinguish the alkaloids from each other?

Before I proceed to discuss these questions, I must premise that the most of the specimens of strychnia and of the other alkaloids on which I experimented were supplied to me by the Messrs Morson. The majority of them were presented to me by them as specimens of approved purity; the remainder were procured from them from time to time. For a few specimens I was indebted to my colleague, Professor Bentley. Several of the alkaloids in Mr. Morson's series are crystals of large size and great beauty, and the remainder are evidently of the best quality. Of some of the more important alkaloids, such as strychnia, brucia, and aconitina, I have more than one specimen. When the results which I obtained did not happen to agree with the descriptions of approved authorities, I made experiments with other specimens, and endeavoured to ascertain the reason of the discrepancy. I may add that the results stated in these papers are based upon several hundreds of experiments carefully performed, and the reactions noted down at the time. In order to guard against any possible misapprehension, it may be well to state that the term "colour-tests" is used throughout these communications in the sense of tests producing a series, or succession, of colours; and that it is further restricted to the chemical colour-tests as distinguished from the galvanic colour-test.

1. *Form and mode of application of the Colour-tests.*—The chemical colour-tests for strychnia consist in the peculiar reactions of the alkaloid with sulphuric acid, *plus* one or other of the following substances:—The bichromate of potash and the ferricyanide of potassium, and the peroxides of manganese and lead. To these may be added, as less generally recognised, the chromate of potash and chromic acid; and it may be well to state that the chromates of soda and ammonia yield characteristic reactions.

To the four recognised colour-tests—the bichromate of potash, the ferricyanide of potassium, the peroxide of manganese, and the peroxide of lead—I propose to add the permanganate of potash.

In order fully to appreciate the action of these tests, it should be borne in mind—

1. That sulphuric acid, of the strength and degree of purity commonly met with in the shops, when added to, and mixed with ordinary specimens of strychnia, does not produce in them any change of colour.

2. That the acid does not occasion any change of colour in the peroxide of manganese or the peroxide of lead.

3. That the acid, when mixed with a fragment of the

bichromate of potash, produces a yellow solution, which passes gradually to a yellow-brown and clear orange.

4. That the acid, when mixed with a fragment of the ferricyanide of potassium, gives a lemon-yellow solution, becoming tinged with blue after long exposure.

5. That the permanganate of potash treated in the same way yields with the acid a light-green solution, deepening in tint by degrees, then assuming a pink tint at the margin, then, after long exposure, becoming brown at the centre and lilac at the circumference, and finally, after still longer exposure, presenting a rich scarlet at the centre and a brown at the circumference.

Now, as the succession of colours produced when strychnia, sulphuric acid, and either of the five substances just specified, are brought into contact, are entirely different from those occasioned by the action of sulphuric acid on the five substances in question, and as, moreover, the strychnia colours develop themselves very speedily, there is no valid objection to the use of these substances as tests. The yellow tint of the acid solution of the bichromate of potash, the lemon-yellow tint of the acid solution of the ferricyanide of potassium, and the light-green tint of the acid solution of the permanganate of potash, offer no impediment to the development of the characteristic strychnia colours, and cannot possibly be confounded with them. The same observation applies equally to the mixture of sulphuric acid with the solutions of these salts. When solutions of the strength of ten grains to the ounce of distilled water are added to equal quantities of strong sulphuric acid, the bichromate of potash yields an orange-coloured mixture, the ferricyanide of potassium a lemon-yellow, and the permanganate of potash a red-brown. The tints vary with the quantity of the acid and of the solutions, and they undergo some change on long exposure; but it may be safely alleged that the colours thus produced do not interfere with the production of the characteristic strychnia colours, and that they cannot possibly be confounded with them. But as for medico-legal purposes, it is well to avoid all objections, however captious, the peroxide of manganese, or the peroxide of lead, may claim to be preferred if, on further examination, they should be found to possess other properties entitling them to a preference.

(*To be continued.*)

ON THE ABSORPTION OF HEAT-RAYS BY THE HUMOURS OF THE EYE.

Under this title a very interesting paper has recently been presented to the Academy of Sciences, Paris, by Monsieur J. Janssen, an abstract of which we have now the satisfaction of laying before our readers.

The author states that, from a consideration of the facts reported in his memoir, he was led to the belief that the humours of the eye would be found to possess the power of absorbing the obscure rays of heat which accompany in such abundance the luminous rays proceeding from our ordinary sources of artificial illumination. He endeavoured, therefore, to establish the existence of this property, and to measure its amount by very accurately conducted experiments.

The memoir comprehends—

1st. The determination of the amount of heat which impinges upon the retina in the eyes of several animals, and from various sources of illumination.

2d. The investigation of the part played by each of the several humours in producing the general effect.

3d. The diathermancy of the humours, and the study of their mode of action upon the heat.

The apparatus of Nobili and Melloni, as constructed by M. Ruhmkorff, was employed in these researches, and with all the precautions necessary to ensure trustworthy results. It was placed exactly north, and protected from the influence of accidental heat-rays both before and at the time of making the experiments. The pile was guarded with a double system of metallic screens; one forming a dark cover around the whole apparatus; the other smaller, covering the pile merely, and capable of being lifted off only at the moment of exposure.

The eye entire.—In order to measure the transmission through the entire organ, a portion of the vitreous humour was laid bare at the posterior part of the eyeball, which was then placed in a receptacle formed of two perforated rings of cork, one of which was provided with a very thin glass for the purpose of retaining the vitreous humour. The eye thus prepared was rested on a plate of metal which carried the screen intended to define the incident calorific pencil. This plate was moveable and allowed of placing the optic axis of the eye in the line of direction of the heat-rays, and of removing it to a distance at which the intensity of this heat could be conveniently measured.

By this method of examination the following numbers were obtained as the mean of general experiments:

Rays which pass through to the retina for 100 *rays from a moderator lamp, incident upon the cornea.*

Eye of an ox.	Eye of a sheep.	Eye of a pig.
7·7	8·4	9·1

With lamps of inferior illuminating power the results were even lower, and so also with an incandescent coil of platinum wire; thus the proportion of rays which pass to the retina decreases rapidly with the illuminating power of the source.

Absorbing power of the several humours.—The author gives in the table appended the results he has been led to adopt:—

Absorption by the several parts of the eye for the heat-rays of a moderator lamp.

	Ox.	Sheep.	Pig.
Rays reflected at the surface of the cornea	4·0	4·0	4·0
Rays absorbed by the cornea . . .	59·8	56·9	57·5
Rays absorbed by the aqueous humour .	19·2		20·6
Rays absorbed by the crystalline lens . .	6·8	30·7	7·2
Rays absorbed by the vitreous humour .	2·5		1·6
Rays which penetrate to the retina . .	7·7	8·4	9·1
Rays incident	100·0	100·0	100·0

From certain theoretical considerations treated in the papers, the author draws the conclusion that the radiations which are suffered to impinge upon the retina have almost entirely been deprived of their obscure rays; hence it follows that the parts composing the structure of the eye must possess the power of effecting a complete separation between the two kinds of radiations—"The heat which penetrates to the retina appears to be the expression of calorific power for the luminous rays."

Diathermancy.—The examination of the humours of the eye, from this point of view, has shown their mode of action upon the radiant heat to be identical with that of water.

The conclusions which the author deduces from the results of his experiments are stated in the following propositions:

1st. That among the superior animals, the eye, although so perfectly transparent for light, possesses, on the contrary, the property of absorbing most completely the obscure heat-rays, effecting thus a perfect separation between the two kinds of radiations.

2d. From a physiological point of view this property of

the humours of the eye appears important, especially when we consider that in the better kinds of artificial illumination (as in the carcel lamp) the calorific intensity of these obscure radiations is tenfold that of the luminous radiations.

3d. These obscure rays are intercepted in general with extreme rapidity by the foremost divisions of the eye; for the source cited, the cornea absorbs two thirds, and the aqueous humour two thirds of the remainder, so that a fraction extremely small is presented to the other media.

4th. As to the cause of this property possessed by the humours of the eye, it resides almost entirely in their aqueous nature; their diathermancy is identical with that of water.

5th. In conclusion, one more reflection seems natural in regard to our artificial sources of light: ought we not to consider them still imperfect while in the best of them there exists so great a disproportion between the really useful rays and those which are foreign to the phenomenon of vision—a disproportion which again becomes apparent on comparing the actual cost with that which should be theoretically necessary?—*Chemical News.*

FACTS AND FALLACIES CONNECTED WITH THE RESEARCH FOR ARSENIC AND ANTIMONY; WITH SUGGESTIONS FOR A METHOD OF SEPARATING THESE POISONS FROM ORGANIC MATTER.

By Alfred S. Taylor, M.D., F.R.S.

(*Continued from p.* 296.)

That this view of the facts is based on pure prejudice is undeniable, and a single chemical illustration will prove it. Standard gold contains more than eight per cent. of copper. Strong nitric acid may be boiled in a golden capsule made of this alloy without removing a particle of copper. If, now, any organic liquid containing a soluble salt of copper be placed in the capsule, and a slip of zinc be brought into contact with the gold through the acid liquid, the copper is removed from the solution, and is deposited on the gold. The capsule may be washed with water, and the film of metallic copper subsequently be dissolved in nitric acid and tested in the usual manner. No chemist would object to use the gold in such a case, merely because it contained copper; he would be governed by the fact, that under the circum-

stances no copper could possibly be derived from the alloy. If the substance used to detect copper was a solvent for gold, of course this mode of testing would be improper. If in a research for poisons we are merely to regard the presence of impurity in substances, without reference to the results, no analyses could be performed. It is very rare to find sulphuric acid, hydrochloric acid, or zinc, absolutely free from arsenic. Much depends on the quantity of each article used for the purposes of testing purity. Every specimen of zinc, if examined in sufficient quantity, would probably yield arsenic; although this metal may be obtained, and is obtained, sufficiently pure for use in Marsh's process. Mr. Bloxam, in a paper recently published on the detection of poisons by electrolysis,* says, "The occasional presence of arsenic in the sulphuric acid, and of both arsenic and antimony in the zinc, has always been a serious objection to the use of Marsh's process; and although the hydrogen evolved at the beginning of the experiment may be carefully examined before introducing the suspected liquid, the operator always proceeds upon the assumption that the zinc is perfectly homogeneous, and that it is impossible for arsenic or antimony which had eluded detection in the first portion of hydrogen evolved, to become apparent when the mass of zinc has entered into solution." Instances have occurred in which analysts have been satisfied with testing their acids in small quantities, while they have afterwards employed them for analyses in very large quantities. It would be difficult to draw the line between a pure and impure article, and insist upon absolute purity. There is so much inconsistency in the statements of chemists regarding these matters, that the public are mystified, and a feeling of distrust is created in all scientific processes. One chemist who has himself used arsenical copper for sixteen years, condemns its use by others when the fact is first made public; another, who professes to use electrotype copper, from theoretical notions regarding its absolute purity, has adopted, unknowingly, the constant practice of using arsenical sulphate of copper as a test for arsenic! While he would probably meet any objection to the use of this salt by asserting that the arsenic is in too small quantity to affect the results, he would, without reference to results or quantity, condemn the use of the metal itself (containing arsenic) for the detection of this poison. The only plan now open to an analyst is, to seek for the purest articles which he can obtain, and to test their purity by every conceivable method before he resorts to their use.

* 'Quarterly Journal of the Chemical Society,' 1859-60.

If he desires to escape the censure of the public, and the uncharitable criticisms of some fellow-labourers in the same branch of research, he must go beyond the ordinary routine of testing his materials. He must look for substances, the presence of which they have hitherto ignored or disregarded; or, in the end, some of them will be found to claim credit, however unjustly, for a degree of caution which they have never themselves exercised. Owing to the want of general knowledge on such subjects, they may for a time succeed in their object, and divert public attention from their own proceedings.

> Committunt eadem diverso crimina fato,
> Ille crucem pretium sceleris tulit, hic diadema.

As a rule, the purity of no chemical substance should be taken for granted in conducting medico-legal investigations; and the operator should, in fairness, always test a quantity of the substance equal to that which he is about to employ in an analysis.

Methods of detecting Arsenic in Copper.

There has hitherto been great difficulty in detecting small quantities of arsenic in copper, and this may account for the fact, that samples of copper are sold as pure, and are pronounced to be free from arsenic, when a more careful research would have demonstrated the presence of this substance. This difficulty may be appreciated from the fact, that when samples of the arsenicated copper-gauze used in the Smethurst case were forwarded to five experienced analysts in England, Scotland, and Ireland, three succeeded and two failed in detecting arsenic in it. A sample of Burra Burra copper supplied to the Royal Mint as absolutely free from arsenic, was found (by a process to be presently explained) to contain traces of that substance. Some Swedish copper which had been reserved as pure by a distinguished chemist, was found, on analysis, to be arsenical. The detection of the arsenic depends entirely on the method pursued.

The first plan which I adopted successfully, consisted in oxidizing the copper by nitric acid, evaporating the acid liquid to dryness, and then heating the residue to procure the black oxide, and, at the same time, to convert the arsenic, if present, to arsenic acid. This acid was subsequently detected in the residue by digestion in water, and the addition of nitrate of silver.

Another plan, proposed and employed by Dr. Odling, clearly showed the presence of arsenic in a small quantity of

gauze, foil, or wire. The copper was entirely dissolved by the aid of hydrochloric acid and a weak solution of chlorate of potash. The surplus chlorine was removed by the gradual addition of small quantities of bisulphite of soda, and the sulphurous acid derived from this salt was removed by boiling—the freedom of the vapour from the acid being indicated by holding in the current, starch-paper saturated with iodic acid. Reinsch's process was then applied to the liquid, and if the copper under examination contained arsenic, a deposit of arsenic was obtained in the usual way on a piece of copper.

There is no chemical objection to this method; but seeing that several substances are employed in the analysis, and that a mixture of salts resulted, it appeared to me preferable to convert the copper to a soluble chloride by digesting it in pure hydrochloric acid alone, and then, from the known volatility of chloride of arsenic, to separate this from the chloride of copper by distillation. For this purpose, I found it necessary to expose the copper in a stratum of pure and concentrated hydrochloric acid contained in a saucer, the metal being partly immersed in the acid and partly exposed to the air. After two or three days' exposure, according to the thickness of the metal, a brown liquid (a solution of subchloride of copper in hydrochloric acid) was obtained. In some experiments, the copper was entirely dissolved; in others, a portion was left. The weight of the residue, after washing and drying, deducted from the original weight employed, gave the amount of copper dissolved. The brown liquid was distilled to dryness in a flask or small retort, placed in a sand-bath, and the vapour was condensed in a flask or receiver containing a small quantity of distilled water. A perfectly clear solution of chloride of arsenic, or a mixture of hydrochloric and arsenious acids, was thus procured. When one part of this distillate was diluted with its volume of water and boiled, and a small piece of pure polished copper was introduced, the presence of arsenic was speedily indicated by the charaeteristic deposit on the bright metal. Another portion of the liquid was introduced into a Marsh's apparatus, or a small flask with a bent tube fixed in its neck, and by the addition of pure zinc, arseniuretted hydrogen was easily procured from it and tested. When to a third portion a solution of chloride of gold was added, and the mixture boiled, the gold was, after a time, completely deposited. The weight of gold thus deposited supplies one method of calculating the quantity of arsenic present in the distillate.

Of the delicacy of this process for detecting arsenic, there

will be, I think, no doubt on the part of those who try it; and it has this important advantage over other methods, that excepting the copper, the purity of which is to be tested, and hydrochloric acid, the purity of which may be easily determined by a preliminary experiment, no chemical is used. It is equally applicable to the detection of minute traces of arsenic in the sulphate and all the salts of copper, soluble or indisoluble. It is only necessary to distil them with a sufficient quantity of pure hydrochloric acid. I had in vain sought for evidence of arsenic in some sulphate of copper by the use of Marsh's process; but on distilling only ten grains of the crystals with hydrochloric acid, chloride of arsenic was obtained in the receiver, and the presence of the poison was satisfactorily proved. In the course of the Smethurst analyses in July, 1859, Mr. Brande and Dr. Odling adopted, at my suggestion, this method of analysing some sulphate of copper pills for arsenic, and they both expressed their satisfaction with it as a safe and delicate process.

(*To be continued.*)

MILK.

We might fairly expect that milk would be exceedingly rich in nourishing materials, since it is the first food tasted by all ranks of mammalian animals, and the food upon which they make most progress in the shortest time. The constituents of milk are much the same in all species of mammalian animals, the difference in the qualities of milk depending on slight differences in the proportions of the constituents. As cow's milk is that almost exclusively employed in this country for the preparation of dairy produce, the following remarks apply more particularly to this kind of milk. We shall better understand these remarks by first observing the general composition of milk, which may be represented as follows:—

COMPOSITION OF MILK.

	Cow's Milk.	Ass's Milk.	Human Milk.	Cream.
Water	87·04	91·65	88·80	62·50
Caseine	4·26	1·80	3·82	5·62
Butter	3·13	1·12	3·04	30·58
Sugar	4·77	5·03	4·20	trace.
Mm. constituents .	·80	·40	·14	1·30
	100·00	100·00	100·00	100·00

It is the fat or butter of milk that imparts its characteristic white, opaque appearance. The fat occurs in a multitude of little globules, which, distributed throughout the substance of the fluid, gives rise to its peculiar white colour. The fat-globules being slightly lighter than the fluid in which they float, slowly rise to the surface on standing, and form a layer, more or less thick, which we call the cream. By suitable means the whole of the fat-globules can be removed, and a transparent liquid obtained, which contains all the other constituents of the milk. It is often supposed that the cream is the essential part of the milk, and we hear of its being given to children in the belief that it is a kind of concentrated milk of superior nutritive value. This, however, is not the case; cream is only rich in fatty substances, and its use in our system is much the same as is performed by the fat of meat. Indeed, we may say that cream or the butter is to milk what fat is to meat—viz., that portion which furnishes respiratory material. We may, however, regard it as a superior and more highly organized kind of fat, since it approaches more nearly to the kind of fat occurring in our own bodies. The market prices of new and skim milk are quite disproportionate to the relative nutritive value; since the latter, having lost nothing but its cream (a material for which other substances could be easily substituted) is but little inferior in point of feeding qualities to new milk; and where, as in many country districts, skim milk, of better quality than that frequently supplied in towns as new, can be had for a halfpenny a quart, a more extended use of it amongst poor persons would be greatly to their advantage. In milk from which the cream has been removed, the other constituents may be separated as follows: On the addition of a few drops of hydrochloric acid, or of vinegar, the caseine, or cheesy matter, separates in flocculent masses. When this is removed by straining, we have left in solution the sugar and the greatest part of the mineral salts, which may be obtained by evaporating, or boiling off the liquid in a water bath until it dries up. The caseine is, perhaps, the most interesting of the above-named constituents of milk. Caseine is one of the group of plastic elements already spoken of as the flesh-forming materials of food. It resembles very closely, in its chemical properties, the gluten of grain, or the fibrine of flesh. We have also mentioned the close relation that exists between the caseine of milk and the vegetable caseine of peas, beans, and other leguminous products. The mineral elements of milk are exceedingly rich in phosphoric acid, a substance especially necessary in the

development of the bones of the young animal it is intended to feed, with the other salts of food.—*Sibson's Every-day Chemistry.*

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Journal des Vétérinaires du Midi, March, 1861.

A NEEDLE FOUND IN THE LEFT VENTRICLE OF THE HEART OF A COW.

By M. Coulon, V.S.

The symptoms present were dulness, diminution of appetite and rumination, infiltration of fluid in the sternal region, enlargement of the submaxillary glands, slight cough, pulse small and slow. The diagnosis was incipient cachexia, and the animal was treated accordingly.

On the third day the enlargement of the glands had considerably increased, and, likewise, the infiltration at the sternum; the fore legs were placed wide apart; there was swelling of the axillary glands; the cough had increased, and there was a jerking of the flanks during respiration. Auscultation of the thorax only denoted an increase in the respiratory murmur; percussion caused pain on the left side; the sound on the same side was less sonorous. Complication of hydrothorax was added to the diagnosis.

There was very little change until the seventh day. She then refused all food, heaved at the flanks, constantly stood on the step of the manger, with the head and neck raised, the fore legs were placed still wider apart, the swelling had extended under the abdomen, and on the tenth day she died.

The autopsia, made directly after, showed the cellular tissue to be filled with clear, yellow serum; the abdominal cavity contained at least two pailfuls of a similar fluid; the organs of this cavity presented nothing abnormal, with the exception of the rumen, the contents of which were hard and dry. On the chest being opened, a large quantity of fluid escaped; there was adhesion of the pleura on the left side, which being detached, a lump was discovered underneath, resembling a bag filled with liquid, and on cutting into it from four to

five litres of black fluid, having a gangrenous odour, escaped. This sac proved to be nothing less than the pericardium, which had formed strong adhesions with the pleura costalis, as well as the pleura pulmonalis, but the strongest adhesion was at the apex of the heart. At the base of this adherence the head of a needle, implanted in the left ventricle of the heart, was perceived. The heart was of an enormous size; its appearance would have led one to believe that it had undergone the process of maceration; the weight of it was 4 kilogs., that of the pericardium 3 kilogs. 250 grains. The needle, which was four centimètres in length, had traversed the apex of the left ventricle in an oblique direction, and a sort of tube, having a cutaneous coat, was formed around it. The right lobe of the lungs showed traces of hepatisation, and the posterior part adhered to the diaphragm. The muscular tissue of the heart presented no alteration, with the exception of a certain paleness of colour, characteristic of hyperæmia; the ventricles contained no clots of coagulated blood, and were perfectly empty.

A similar case has been reported by Barrier, Vétérinaire à Chartre, as far back as 1776. This occurred also in a cow, and the animal showed similar symptoms to those reported by M. Coulon. She also constantly raised the left fore leg and shoulder, as if she felt great pain. Death followed on the fourth day after the first symptoms. The alterations seen *post mortem* were—the lungs presented a marbled appearance, and were in a state of phlogosis; the heart and pericardium looked as if macerated, and its substance could be easily separated by the fingers; the pericardium contained a serous, fetid liquid, of a grayish colour, and in a fatty, adventitious deposit within the heart, a hair-pin was found, about three inches long. The spot occupied by this foreign body had undergone no alteration. There were in the parenchyma of the heart several small, gangrenous abscesses, but all empty and dry.—*Corresp. de Fr. de Feugré*, 1810.

TUBERCULOUS STATE OF THE MITRAL VALVE OF THE HEART OF A PIG.

By M. Pussacq, V.S. à Vicq.

The subject of this alteration was a ten-months-old pig. It had been ailing for some time when the author was sent for, but it was impossible closely to examine the animal, on account of its savage disposition. There was great difficulty

in respiration; the inspiration was performed at twice or double time, but it was followed by a free expiration; there was no difficulty in deglutition. The author diagnosed an affection of the lungs, probably of a chronic nature. The animal died in about a month after, and on the *post-mortem* examination the abdominal organs were all found healthy, and in the chest nothing particular was observed, but on detaching the lungs a large quantity of blood escaped from the aorta, which, instead of being scarlet, as arterial blood should be, was black, like venous blood; the lungs were gorged with blood, but presented no other alteration; the heart appeared somewhat larger in size than natural, the left auricular ventricular orifice was larger than the right, and in the place of the mitral valve there existed a small, yellow body, about the size of a hazel nut; in shape it resembled a strawberry, and had a certain degree of hardness; on pressing it between the fingers for a little while, a slight smell of sulphur was emitted. This body was composed of small granulations, the fragments of which resembled those obtained by scraping a lump of sulphur; the orifice was nearly obliterated by this body. There was also some structural alteration in other parts of the ventricle, appertaining more or less to endocarditis.

A CASE OF URETERITIS IN A CALF EIGHT MONTHS OLD.

By M. Guimberteau, V.S., St. Antoine, Dordogne.

The symptoms were dulness, carrying the head low, pulse small and accelerated, the respiration increased, the mucous membranes pale, the beating of the heart strong; but that which was the most striking was the large size of the abdomen. The existence of fluid in it was detected both by percussion and auscultation. The diagnosis was *hydrops abdominis*. The animal was consequently killed in the presence of the author, when, on opening the abdomen, not a drop of fluid escaped, to his great astonishment, and he thought he had made a mistake in his diagnosis, but he soon perceived a voluminous organ to exist, and through the distended and thinned membrane could be seen a transparent liquid. On examining this closely, he found it to be a distended ureter; and on measuring the liquid contained in this large reservoir, he found fifty litres, which, on examination, proved to be urine. The cause of this extraordinary lesion was an obstruction of the ureter at its entrance into the bladder.

Annales de Médecine Vétérinaire, Bruxelles, April 1861.

REPORT ON THE ESSAYS ON INFLUENZA, BOTH IN MAN AND ANIMALS.

By M. Verheyen.

The question put by the Academy for consideration was to determine the nature and etiology of the malady in the horse, called influenza; to point out its relations to typhoid affections in man, and also the most appropriate medical treatment.

Only two memoirs have been sent in, one written in French, and bearing for motto, "*Il n'y a pas d'effet sans cause;*" the other in Latin, with many German quotations, having for its epigraph, "*Una est certissimè medicina et hominis et veterinaria.*"

The word influenza is Italian, and is used to designate catarrhal fever in man, and is synonymous with "grippe," which, according to J. Frank, is derived from the Polish word "crypka," which signifies a cold. The chronology of catarrhal epidemics ascends to the thirteenth century. From their medical history we learn that each of them assumed a special physiognomy, but that, in spite of their complications, they were always accompanied by certain phenomena which allow of their being classed with the grippe or influenza. The affection of the mucous membrane of the respiratory passages, more or less extensive, or concentrated in the shape of angina, bronchitis, broncho-pneumonia, &c., predominate as the derangement of the digestive organs present certain phenomena. The catarrh of the mucous membrane of those organs may acquire that intensity which would react on the respiratory apparatus symptomatically. In all the maladies which collectively affect the organism, notwithstanding the epidemical influence, the individual predisposition does not lose its claim, neither does it efface the principal type which persists, more or less modified. These modifications are found to exist in all epidemics. History has preserved an account of them, and faithfully transmitted it to posterity. The great obstacle to the study of comparative medicine is in the isolation of the two branches of the same trunk, which have extended their twigs in different directions instead of entwining themselves; hence the origin of the confusion which the term influenza has caused in veterinary nosology; however, if we take a retrospect of the history of epizootics, we cannot deny that the horse has been more than once, like man, attacked

with catarrhal affections which have become general. In tracing the history of the principal epizootics, they only date with certainty from the year 1729. In the month of April in that year the grippe broke out in Russia, and in October in Vienna. It also invaded Germany, Switzerland, Italy, Sicily, Spain, Mexico, and England, and it only ceased in the spring of the following year. Loew, in tracing the history of this catarrhal fever, says that it broke out in Hungary and Austria amongst the herds in October and November; that it began by affecting the head, and terminated about the fourth day by an epistaxis, a diarrhœa tinged with blood, or else the vomiting of stercoraceous matter. As the same phenomena are manifested in man, it may be fair to conclude that the malady and its causes are identical, with one exception, however—the vomitus stercoreus; this being indicated as general, raises a suspicion as to the perfect truth of the account.

The epidemic of 1732-3 reached Scotland at the end of December; in January it broke out in England, where a catarrhal epizootic in the horse had preceded it. The celebrated Huxham seems to have studied it with great interest, for he has accurately described its different phases.

This epizootic broke out in September.—"*Angina tussiens undique inter equos quæ plurimas suffocat prorsùs.*" In October it had obtained its greatest intensity.—"*Jam morbus equorum sævit maximè.*" In November it was stationary.—"*Adhuc morbus epizooticus inter equos.*"—In December it began to decline.—"*Lues equina adhuc grassatur, sed immunita valdè est.*" The veterinary author Gibson, who was contemporary with Huxham, describes the symptoms still more explicitly. Toward the end of the year 1732, he says, a remarkable affection attacked the horses in London, and in other parts of the kingdom. The animals were sudddenly seized with a violent, dry cough, which shook their whole frame, so much so that some of them lost their power of standing, almost fell down, and were threatened with suffocation. The throat was principally affected, the glands were tumefied and painful, and during the two first days the patients refused all food and drink. Other unfavorable signs were observed, which threatened a great mortality. The violence of the cough was often so intense as to cause the blood to flow from the nostrils. These hæmorrhages generally occurred about the third day, and continued until the sixth, being followed by an abundant discharge of purulent matter, and this by one of a more healthy aspect. During the whole of this period the animals refused their food, more, however, on account of the

expectorated matter which covered it, as otherwise their appetites seemed good.

The salient characters of this malady were again found in the epizootic which visited Scotland and other countries. An epizootic catarrh prevailed in 1760 in Yorkshire and Cleveland, and although it lasted but for a short time, not a horse escaped the attack. A violent cough, with fever and a discharge from the nose, were the prominent symptoms. In some cases it was complicated with pneumonia, which terminated in death.

At the same time there prevailed an epidemic respecting the nature of which there exists some disagreement. According to Bisset it was scarlatina, and Hecker considered it to have been a miliary angina, in which sometimes the eruption, and at others, the inflammation of the throat predominated. The doubtful coincidence of a malady alike affecting man and the horse ceased in 1767, when the "grippe" generally prevailed in Europe.

At the time it broke out in London there was not a stable free from inflammatory catarrh.

In 1775, the catarrh amongst horses and dogs preceded that in man. The disease in the dog, Lorry says, was evidently inflammation of the mucous membrane and angina.

The epidemic of 1803 was preceded or followed by a catarrhal epizootic affecting the horse and the cat. The catarrhal fever in the feline species spread over the whole of Europe, and destroyed one half of the cats.

One of the most remarkable epizootics was that of 1805, which prevailed simultaneously with an epidemic—the grippe. This epizootic has been described by several veterinary surgeons and different professors of the schools. The malady did not in all places assume the same characters, nor were its complications the same. As to its nature, it also received different denominations. Adynamic in the Duchy of Holstein, catarrh of the mucous membranes was complicated with pleuro-pneumonia, hepatitis and œdematous swellings filled with bloody serum. A sanguineous, purulent fluid also escaped from the eyes and nose. On the autopsia the lungs were found gorged with blood, sometimes hepatized and containing vomicæ filled with purulent matter, at other times adhesions of the pleuræ and effusion existed. The liver and the spleen, according to Vibourg, were in the same state as the lungs. The mucous membrane of the intestines was covered with brown spots. Based on this, the professor at Copenhagen named the malady, complicated putrid fever. In Austria it presented the same characters, and was designated by Wollstein,

director of the school at Vienna, a malignant putrid fever, complicated with inflammation of the lungs and liver. The disease also received the name of nervous fever and acute typhoid catarrhal fever. Less intense in Hesse, Pilger called it benign nervous fever. At Berlin it was exceedingly mild. The director of the school reports that, of 400 horses admitted into the institution, not one died, and that the symptoms were those of bronchial catarrh, attended with a slight fever. Nevertheless he thought it necessary to give it the name of nervous fever.

Numann was the only one who perceived the relation of this epizootic in horses to epidemic catarrh in man, and he gave it the name of influenza, and from this period dates the introduction of the word influenza in veterinary nosology.

Since the commencement of the present century epizootic catarrhal affections have continued to prevail, but on account of their benignity have attracted comparatively but little notice. This, perhaps, is owing to the deplorable isolation of the two branches of medicine, human and veterinary.

To confirm the oneness of these epizootics and epidemics, we most come to a nearer epoch. In 1831 the grippe, which preceded the cholera, was accompanied by a catarrhal epizootic of the same kind in the horse. The epidemic of 1858, which was the subject of a discussion in the Academy, was accompanied by a catarrhal epizootic in the horse, in which pneumonic and anginic complications were frequent. In some cases of croup it was noticed that as soon as one horse was attacked in a stable all the others caught it, and it prevailed to such an extent that in many districts the labour of the fields was suspended. In some farms the disease was complicated with tumours under the jaws and on the parotid glands, lips, neck, and the chest. It was not only in the young horses where strange abscesses prevailed, but, as soon as the catarrhal affection assumed that form in one stable, all the animals suffered alike, whether young or old. It was also observed that the state of convalescence was extremely long, particularly amongst foals. The epizootic ceased in the autumn of 1858, but reappeared the following summer, at which period few localities escaped.

This retrospective review is made to demonstrate the analogy that exists between the catarrhal epidemic of man and the epizootic catarrh of the horse, under the double report of its origin, and that the name of influenza, given to it in 1805, has reference to a defined morbid state (*la grippe du cheval*).

By a singular mistake, the term influenza has been applied

to affections which have nothing in common with each other, except their epizootic character. The name has not been much used in France, but in Germany, Holland, Belgium, and England, it has been so much employed and abused, that few maladies attacking several horses in a stable are not designated influenza.

In briefly retracing how a confusion of words has brought about a confusion of ideas, in the decennial period of from 1820 to 1830, a new form of disease sprang up, which principally consisted of pleuro-pneumonia, complicated with hepatitis. This affection became persistent, and attacked in preference those horses that were congregated in large numbers. It also took on the epizootic form. Sometimes its range was limited, at others it spread over all the country. Barracks and post stables suffered most, but it did not spare either those of the rich or the agriculturist. This malady has appeared from time to time ever since, principally in the spring and autumn, but neither the summer nor the winter will arrest its progress. Prinz informs us that in 1832 the malady prevailed extensively in Prussia. In his summary of the medical constitution of Saxony, he says that, in October, the catarrhal rheumatical form predominated. In Dresden a great many horses were attacked with fever which had this character, but that it did not become epizootic. That in Prussia similar maladies had prevailed amongst the cavalry horses, and that they were sometimes designated influenza, at other times an affection of the lungs. Tegge, who practised in Pomerania, in giving a summary description of it, proposes to call it typhoid inflammation of the lungs and liver, or influenza. One at once sees that the term influenza has been taken hap-hazard, and been applied to almost any affection of the organism, in the same way as it might have been applied to any new disease in which the determining cause or influence was a mystery. Some persons, to add to this confusion, have proposed to give to influenza as many forms as there are complications; hence we have, 1st, the rheumatic simple; 2d, the rheumatico-catarrhal; 3d., gastro-rheumatical. In this arrangement, pneumonia, as if altogether insignificant, is completely overlooked, Others have improved on this by adding a fourth form, viz., bilioso-erysipelatous. In this confusion, worthy of the symptomatic school, some practitioners find their account. All acute diseases with them become influenza, and if they are unable to seize all the subtile means of the symptoms, they invent new ones.

In a memoir recently published on typhoid fever in the horse, the author distinguishes three forms, viz., one mucous,

one thoracic, and one abdominal. These three forms correspond to those of influenza; the only change is in the name.

If it were necessary to justify what has been stated relative to the confusion that exists in the nosology of this disease, the memoir which has for its motto, "*Il n'y a pas d'effet sans cause,*" would furnish ample proof. The author begins by declaring that he could not give a term which would apply to the various forms and complications of this affection, as the serous membranes, principally those of the chest, with the mucous membranes of the digestive and respiratory organs and the liver, are either simultaneously or alternately affected. Thus the fever, the acceleration of the pulse and the respiration, the pain the animal feels on the compression of the chest, the icteric tinge of the visible mucous membranes, are the index of the catarrhal and rheumatical forms. And although the catarrh of the respiratory passages is not an occult malady, the signs which indicate it are not here mentioned. When to these phenomena there is added abdominal pain, it is metamorphosed into gastro-rheumatismal; when there is swelling of the glands under the jaw, the lymphatic element complicates the disease. The author further states that influenza is an erysipelous fever of the respiratory and digestive mucous membrane, depending on a bilo-gastric state.

The commission thinks that these considerations suffice to indicate the merits of this memoir, which they style as "*rudis indigestaque moles.*"

In referring to the second memoir, they express a satisfaction in reading it. The author begins by the remark that in the names given to the many maladies of man and animals few are proper, while many of them are even ridiculous; but that custom has consecrated them as much on the part of the learned profession as of the vulgar. Those denominations which do not obstruct the study of the malady may remain, the others should be allowed to fall into desuetude. It is, however, otherwise when the names used convey notions of different maladies, and tend to confound them. In the present century, the describing under the vulgar name of influenza a number of diverse affections has furnished a convincing proof of the *horribili modo*, and the serious inconvenience of this abuse, *quam noxium hac sit.* The author calls influenza a common malady to man and animals. Comparative pathology, he adds, shows that in the affection of the different species there is only a variation, the vitality being the same, and also regulated by the same organic laws. If we compare the lesion of the

ox, the dog, the sheep, and the pig, we only meet with those variations which are founded on the difference of their organization.

The author designates by the term influenza a disease in every respect similar to influenza in the human subject. He claims, in favour of Falk, the priority of having been the first to establish this identity, and he then reproduces the description of the epizootic catarrh, which Falk observed in 1840 in the stables of Prince Schwarzburg Rüdolstadt. The author confirms his opinion by citing the account of Hertwig of the epizootic of 1851 which prevailed in Berlin, and which was not fatal. This account shows that between influenza and the many complications to which the name of influenza has been given, there is no correlativeness of etiology, the epizootic catarrh having entirely disappeared when the pleuropneumonic hepatitis appeared. From this the author passes to the criticism of the forms of catarrho-rheumatic, gastro-rheumatic, and biloso-rheumatic, which he does not admit, simply because the symptoms are common to all epizootics.

In the charbonous complication of influenza, the decomposed blood is black and thick, the vascular organs, such as the lungs, the liver, and the spleen, are gorged with blood of the same character; infiltrations of a citron colour, appertaining to charbonous affections, are also present. These latter sometimes occur under the form of anthrax. Finally, to find an analogy between the influenza of the horse and that of man, the author adduces a complication of encephalitis, myelitis, and also inflammation of the exudatic and plastic membranes.

The treatment recommended by the author of this memoir for influenza, the report says, is rational, but it does not vary from that generally known and adopted.

The commission, after a most critical examination of these memoirs, recommends that the prize be awarded to the one which has for motto, "*Una est certissimè medicina et hominis et veterinaria,*" and that the two memoirs be deposited in the archives of the Academy.

N.B.—The Academy has adopted these conclusions. The commission was composed of MM. Gaudy, Lebeau, and Verheyen.

ROYAL COLLEGE OF VETERINARY SURGEONS.

An adjourned meeting of the Council was held on the 5th June, 1861,

Present:—The new President, Mr. Silvester in the chair, Professors Spooner, Simonds, and Varnell, Messrs. Wilkinson, Withers, Ernes, Jex, Moon, Gamgee, Harpley, Barrow, Robinson, Field, and Braby.

A letter from Mr. E. N. Gabriel having been read, tendering his resignation of Secretary, it was proposed by *Mr. Field*, and seconded by *Mr. Gamgee*, that Mr. Gabriel's resignation be accepted.

Professor Spooner proposed, and *Mr. Ernes* seconded, a motion, "That Mr. Braby be appointed Secretary *pro tem.*" Upon the ballot being taken, he was declared to be unanimously elected.

Proposed by *Mr. Field*, seconded by *Mr. Wilkinson*, "That the thanks of the Council be given to Mr. Gabriel for his valuable services for many years as its Secretary." Carried unanimously.

Mr. Wilkinson returned thanks to the Members of the Council for the courteous manner in which he had been treated by them during his year of office as President, and for the compliment they had been pleased to pay him by voting him their thanks.

E. Braby,
Secretary pro tem.

MEETING OF COUNCIL, held June 12, 1861.

A meeting of Council was held this day,

Present:—The President in the chair, Professor Spooner, Messrs. Broad, Mavor, Wilkinson, Withers, Hunt, Dickens, Jex, Robinson, Field, and Braby.

A letter from Professor Gamgee was read, accompanied with a list of the members of the Body Corporate, which was ordered to be laid before the registration committee.

Agreeably to the notice of motion given at the last meeting by Professor Simonds, a committee was appointed to take into consideration the duties of, and the salary to be paid to, the Secretary of the Royal College of Veterinary Surgeons.

E. Braby,
Secretary pro tem.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

On the 4th ult., the members of the West of Scotland Veterinary Medical Association met at the Glasgow Institution Rooms. Mr. Steele, V.S., Biggar, President of the Society, took the chair; and after some private business, and the election of a new member, Mr. M'Dougall, Veterinary Surgeon, Old Kilpatrick, addressed the meeting as follows:

The subject I have selected for a few remarks and the present discussion, is pleuro-pneumonia-epizootica in cattle, the origin, nature, and cure of which are as yet surrounded in mystery. Pleuro-pneumonia is generally believed to have a foreign origin, and to have been brought to this country by the importation of infected cattle. It made its appearance in Ireland, in 1841, but whether it was imported by cattle, or originated spontaneously, as many epizootics are supposed to do, is as yet a matter of some doubt. Our Australian friends, I believe, are of opinion that it was on account of our exports to that country of infected cattle that they now suffer from its ravages. Without doubting their assertion, we well know that when it is once located in a district, it is not generally got rid off without reminding us of its fatality; hence we find that in Ireland many thousands of cattle became its victims, and it soon extended its ravages to England; and in a very short time after it appeared in England, I was called, along with another veterinary surgeon, to examine a cow in our own district, which, according to the owner's statement, had been attacked by an unusual and peculiar disorder. Our attention having been attracted some time previous in the *Veterinarian* to the symptoms of the malady, we had no difficulty in diagnosing this first case to be of the same nature as those which were described in this valuable periodical, and, as far as I am aware, it was the first case that had occurred in Scotland. The case proved fatal, and upon a *post-mortem* inspection our opinion was too truly verified as to the nature of the disease. How the first case, in my opinion, originated admits of an explanation. The farm of Drumchaple, where this case occurred, is situated about six miles west of Glasgow, having the Forth and Clyde Canal passing through the farm, and it was discovered that at the time of breaking out of this case a vessel partially loaded with foreign hides, on her passage upwards through the canal, was detained at this part where the cows were grazing. I am of opinion that the epidemic poison was in all probability emitted from these foreign hides and breathed by the cattle, thus originating the disease amongst the farmer's stock. New cases occurred daily in the farmer's stock, which consisted of from twelve to fourteen cows, all the cases proving fatal, leaving only one living cow, which was considered never to have been attacked by the disorder. The disease spread rapidly in the surrounding country, and generally there was some medium of communication to account for its propagation. Having made these remarks, I will now shortly detail the symptoms of the disease; and as you are all well versed in them already, I will only mention a few of the more prominent of them:—Loss of appetite; entire suspension or diminution of the lacteal secretion if the cow is in milk; the breathing is much quickened, accompanied with a heaving at the flanks; the pulse is generally small and rapid, though sometimes it is full and strong; cough is generally an early symptom, though sometimes it is absent till the disease has made considerable progress; the nose is poked out; the muzzle dry; the mouth hot. As the disease advances there is an abundant flow of saliva; when the spine is compressed much pain is evinced, and the animal gives a distressed grunt or moan; the back becomes arched;

pressure on the intercostal spaces causes pain, and as the disease progresses the breathing becomes short and laborious, the saliva flows more copiously from the mouth, the animal refuses all food for some days, and at last dies exhausted. If the cow is in calf, she generally aborts; and if she has gone beyond the fourth or fifth month, it is a very unfavorable occurrence. During the progress of the disease, if the cow lies, it is almost always on the diseased side. There is one symptom I have not mentioned that you will discover at a very early stage of the disease, and often when there is no suspicion of the animal being affected. By placing the ear on the left side of the thorax, the heart will be heard to have a peculiar jerking, grating sound, which is accompanied by a throb. By this symptom I have been able in an infected byre to discover the disease when the animal was feeding and seemingly in her usual health. On auscultating the chest, we find the respiratory murmur is somewhat louder at first; in a few hours a distinct crepitus is heard. This soon disappears, and we hear a loud tubular sound, accompanied by a soft mucous râle; and as the disease advances, there is an entire absence of sound generally over the base of one lung, or the greater part of both lungs. Percussion elicits a dull sound over the affected parts of the lungs, or over the chest generally. The treatment I have geuerally pursued may shortly be stated. I cause the animal, if it can be done, to be separated from all the others, aud put into a comfortably warm, well-ventilated, loose box. Counter-irritation in its most active form to the front and sides of the chest; small and repeated doses of Fleming's tincture of aconite, the bowels to be regulated by small doses of laxative medicine and nutritious opening food, such as boiled turnip, bran mashes, and, best of all, green food, if it possibly can be procured. This I follow, when the more active symptoms subside, by tonics, such as the preparations of iron, gentian, and ginger; and when much debility exists from the first, or supervenes afterwards, I give stimulants, such as porter, whisky, and other alcoholic fluids. Ou a *post-mortem* examination, if the disease has run its natural course, we find the lungs consolidated throughout, and infiltrated with a more or less coagulable substance. The surfaces of the pleuræ adhere in many places, and contain in the cavities large quantities of serum, mixed with flakes of coagulable lymph. The pericardium presents similar appearances to the pleuræ, and generally its cavity is nearly filled by a dropsical effusion. The thorax in most cases also contains large quantities of a dropsical fluid. This disease I consider to be a specific and very acute inflammation of the fibro-serous membranes of the thorax, accompanied by a low typhoid type of fever, which does not admit of depletion and other reducing means that we generally adopt to cheek inflammatory action, and owing to the important and vital organs being affected, the disease pursues its fatal course unchecked, and death is the result in the vast majority of animals attacked.

Mr. Anderson, V.S., Glasgow, rose and referred to some interesting faets which had been observed in Mr. Harvey's extensive establishment at Port Dundas. Mr. Harvey is renowned as the proprietor of the most extensive town dairy in Scotland, and necessarily pays great attention to the best means of averting excessive losses by such a disease as pleuro-pneumonia. Last year he sent to England, and bought 100 young cows. These he at once subjected to the influence of contagion by placing them in byres with animals severely affected with the disease. By this means many became affected; and, indeed, Mr. Harvey believes that all take it, some in a mild and almost inperceptible form, and others are fatally attacked. He placed a certain number in a very roomy well-ventilated byre, in which abundant space was left between the animals; and the conditions seemed most favorable to a healthy condition of the cows. The remainder were huddled

together closely in a more confined shed; and according to ordinary hygienic notions, the latter would have been regarded as the most unhealthy of the two places; but in the open and roomy byre the mortality attained fifty per cent., whereas in the close one the deaths only amounted to five per cent. The only explanation Mr. Anderson could afford of this very singular and unexpected circumstance was that warmth appeared essential to recovery; and whenever animals are exposed to draughts of cold air, or kept generally cool, they had not such a good chance to withstand the disease. Mr. Anderson spoke in favour of the old thatched roofs, and thought that the newly constructed byres, with tiles on the top, were not so warm, and even not so well ventilated as the more rustic buildings which they were once accustomed to.

The Chairman remarked that Mr. Anderson's observations were very interesting and very just regarding the warmth of byres.

Professor Gamgee then addressed the meeting, and said that the observations made by Mr. M'Dougall, coupled with what had been referred to by Mr. Anderson, pointed to several subjects of great interest in connection with the disease under consideration. In the first place, regarding the appearance of the disease in Scotland, Mr. M'Dougall suggested the means whereby it had penetrated a part of the country, whereas, on the authority of Mr. Horsburgh and others, there would be no doubt that in Edinburgh the malady was first observed to be imported by cattle brought from England to All-Hallow Fair. The disease then gradually spread forwards as animals in the ordinary run of trade were transferred to the north, and it was a year before any case occurred as far as Inverness. Mr. Gamgee said that it was a very important fact that in many districts the disease was still perfectly unknown, and he referred to their worthy chairman and other experienced practitioners to substantiate, as he knew they could, what he then stated. If the circumstances which prevented the penetration of the malady to certain districts were investigated, it would be found, without exception, that it depended on farmers breeding their own stock, or purchasing from their near neighbours, who not only had never had the disease amongst their stock, but avoided public markets and buying in from unknown sources. He knew a dairyman in Edinburgh who for a long time resisted the temptation of buying cows in the Edinburgh market. As he needed stock, he procured it from his friends in Dumfriesshire; and at the periods when the malady was very prevalent in Edinburgh, his animals escaped free. About three years ago he was constrained, from want of milk to supply his customers, to go to the public market for a cow. That cow communicated the disease to his stock, whereby he lost every animal, and then returned to his old system. Up to the present day there has been no recurrence of the disease. Referring to Mr. Anderson's statement as to the cows in Mr. Harvey's byre escaping from relapses when they had taken the disease once, he wished to observe that there were two causes operating in preserving the animals from subsequent attacks. The first was, no doubt, having the disease, but it was well known that when animals became thoroughly habituated to a byre, whatever might be the conditions under which they were kept, they resisted the spread of disease far more than when freshly imported. He found that when called to places where the disease appeared to be spreading, great mischief was sometimes done by removing all the animals from the byres or courts they had been occupying, and placing them in fresh places or at grass. Such a change usually increased the rapidity with which the malady spread. Doubtless it was advisable to remove and destroy the diseased ones, and with reference to the remaining animals great responsibility must be felt by veterinarians in

advising any very decided line of action. Not only did he believe that they were not justified in sending a lot of lean or half-fed animals to market, to carry the disease further, but he found that this was often a ruinous procedure for the person on whose farm the disease appears. He had recently had occasion to test a method which he first learnt from Professor Maffei, of Ferrara, a man of great skill and extensive experience, and which method has recently been claimed as original in France. This plan is yet under trial, but his experience was most favourable to it. He referred to killing animals absolutely diseased, and administering to all the others preparations of iron coupled with aromatics. He was recently consulted by Mr. John Simpson, farmer, Balmerino, Fife, who had a stock amounting to nine three-year-olds, and eleven two-year-olds in stalls feeding for the butcher, besides fourteen lean animals in the court, and five cows in the byre. The disease was imported on the farm by diseased cattle, and appeared first among the cows and then amongst the feeding stock, both fat and lean. The morning he visited the farm two of the fat animals were severely affected. Mr. Simpson wished to know if the stock had better be removed from the farm to make place for fresh animals to eat up his abundant supply of turnips and other food—whether he should send the whole to market or keep them on. Mr. Gamgee ordered the removal of the diseased, and at once commenced the iron treatment. Though cases had been occurring daily before, the disease was at once checked, and no case has been seen since. This important fact, though single, supported many others adduced by continental veterinarians. And the explanation of the *modus operandi* of the preventitive is very simple, inasmuch as it strengthens the animal to withstand against a poison which may even be thrown out of the system without inducing the symptoms of the disease. It was entirely from the invigorating and health-giving power of the iron that it kept the malady in check. He advocated the most extensive trial of a system which was simple and probably the most effective yet suggested.

Mr. Anderson alluded to Mr. Gamgee's observation that habit was a preventitive. He begged to state that Mr. Harvey's cattle were all young and fresh, thus taking the disease at once when placed with the affected animals, and afterwards escaping any relapse.

Mr. Steele said that for the last fourteen or fifteen years he had seen much of the disease, but never on farms where the cattle were bred or bought from neighbours with great circumspection. He knew many places which by this means had remained quite free from the disease, whereas, wherever the disease appeared, it could be traced to market cattle.

Mr. Robertson, of Greenock, said that he knew a whole district—Roseneath—where cattle were bred and not bought in, and no single case of the disease had ever been seen there. He wished to ask whether anything definite could be stated regarding the period which might elapse from the exposure of the animal to the influence of contagion and the manifestation of the disease.

Several speakers alluded to the variable length of the period of incubation, which is most commonly about forty days, but may be extended in animals in vigorous health, and capable of withstanding the potent causes operating to disturb their systems.

Mr. Bryce, of Stirling, alluded to the occurrence of chest affections in cold and damp byres, especially in new-built steadings; and Mr. Steele referred to the great frequency of disorders of the chest in Ayrshire cows. This he attributed to the delicate nature of many of them, and to the weather they are exposed to.

Mr. Anderson, of Glasgow, thought the predisposition to the lung

disease in Ayrshire cattle might be owing to too much breeding in and in, and to animals being bred too delicate.

Mr. Steele stated that cows with a good coat were preferred in districts where coarse weather was not uncommon.

Further remarks were made by several speakers in confirmation of what had been stated, after which the meeting adjourned.

ALEX. POTTIE, M.R.C.V.S.,
Secretary.

ARMY APPOINTMENTS.

WAR OFFICE, PALL MALL, *June* 25, 1861.

3d Light Dragoons—Veterinary Surgeon Hicks Withers, from the Royal Artillery, to be Veterinary Surgeon, *vice* B. Chaning Rouse Gardiner, promoted to the Staff, Royal Artillery.

Acting Veterinary Surgeon—A. E. Clarke, to be Veterinary Surgeon, *vice* H. Withers, appointed to the 3d Light Dragoons.

First Class Veterinary Surgeon—B. C. Rouse Gardiner, from the 3d Light Dragoons, to be Staff Veterinary Surgeon, *vice* F. Delany, whose transfer from the 1st Dragoon Guards to the Staff, as stated in the Gazette of July 10th, 1860, has been cancelled.

OBITUARY.

WE extract from a local paper the following:

SUDDEN DEATH.—Between eight and nine o'clock in the evening of Thursday, June 13th, Mr. W. Wotton, veterinary surgeon, Bampton-street, Tiverton, was found dead by his servant in the rear portion of his dwelling. The deceased had been frequently attacked with epileptic fits, and it is thought that one seized him, and immediately put an end to his existence. He had resided in Tiverton for many years, and was very skilful in his profession.

Mr. Wotton obtained his diploma at the Royal Veterinary College, March 6, 1832.

ERRATUM IN NO. 402.

At page 366, among the Students of the Edinburgh Veterinary College, as having obtained their diplomas, *for* Mr. D. M'Meachan, *read* Mr. Duncan McNab McEachran, Campbeltown, Argyleshire.

THE

VETERINARIAN.

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Communications and Cases.

ON THERAPEUTICS.

By Professor Brown, M.R.C.V.S.,
Royal Agricultural College, Cirencester.

(*Continued from p.* 385.)

ANTISEPTICS.

The occurrence of fœtid secretions from wounds, or from mucous membranes when suffering from disease, is by no means unfrequent. The secretion may arise from constitutional disease, or from a peculiar condition of the affected part; in either case the destruction of the putrid matter, as soon as it is excreted, is desirable, for the purpose of avoiding the injurious consequences which commonly result from its remaining in contact with an absorbent surface.

Antiseptics act either by altering the combinations upon which the putridity depends, or by absorbing some of the decomposed fluids, or by oxidising the organic matter, and thus completely changing its character; or by setting up a species of fermentation; or, as in the case of certain salts, by hardening the tissues, and so diminishing their liability to decomposition. The compounds of chlorine are the most effective general agents, as the products of putrefaction include combinations of hydrogen that are at once decomposed by contact with chlorine, for which hydrogen has a great affinity. Nitrate of potash and sulphite of soda probably produce some effect, from their power of hardening animal texture; certainly the latter salt, in considerable quantities, is almost immediately effectual in arresting the disengage-

ment of fœtid gases in tympanitis (hoven) in cattle and sheep.

Charcoal is a powerful absorbent, and owes its antiseptic influence to the possession of this property.

Yeast is a very valuable application to putrid wounds, and has the advantage of being perfectly safe as a domestic remedy.

Permanganate of potash is probably the most powerful and complete antiseptic known; destroying, as it does, the putrid matter at once. Its action is referred to the formation of ozone; it possesses no powerful medicinal properties, nor does any objectionable consequence follow its application; we have employed it in the form of Condy's fluid with very satisfactory results, although experiments are wanting to establish its value in veterinary practice.

The instances in which antiseptics may be advantageously exhibited are sufficiently numerous:

1st. In putrefactive fermentation of the contents of stomach or intestines—causing distension (tympanitis).

2nd. In chronic derangement of the alimentary tube associated with peculiar fœtor of the dejections.

3rd. In the various forms of necræmia and typhus.

4th. In putrid discharges from unhealthy wounds, and particularly in cases of grease, thrush, wounds of the foot, and farcy ulcers.

For internal exhibition—charcoal, chlorinated lime and soda, and hyposulphite of soda are found practically most useful.

For external application—chloride of zinc, chlorinated lime, charcoal, and permanganate of potash are to be selected.

It will be perceived that the action of antiseptics is, to a great extent, only palliative; as even those agents which are most energetic in their destructive influence upon decomposed organic matter do not prevent the process, while they destroy its products; it will consequently be necessary to continue their use so long as the indication of the putrefactive changes are apparent, and as most of the agents possess very slight medicinal properties, no marked effect upon the system need be apprehended, even should an extensive employment of them be necessitated by the exigencies of the case.

DIETETICS.

The regulation of the diet is of such particular importance in the treatment of disease, as to occupy, in the estimation of many, the first position in the science of medicine, although

the actions induced by various articles of food are admitted to be non-medicinal. In our ordinary systems of feeding, a single object is usually sought, viz., that of preserving the bulk of the body, or even of adding to it; we recognise from habit the fact that aliment is capable of doing so much under ordinary circumstances.

During the general disturbance occasioned by disease, the digestive functions are impaired, and, under such circumstances, refuse to appropriate food which, up to this, has sufficed for the support of the system; the question now arises as to what kind of aliment is adapted to the altered condition of the organism. In pursuing this inquiry, it is necessary to ascertain something of the effects of various articles of food upon the animal in health and disease.

Physiological Action of Food.

Without entering into a minute consideration of the digestive process, it will suffice for our purpose to trace the food through its various changes in the course of its conversion into the components of the animal organism.

In the mouth the aliment is commixed with saliva, in the stomach it meets the gastric juice, in the duodenum the biliary and pancreatic secretions, in the intestinal tube throughout with various amounts of mucous secretion; by the agency of the lacteals its nutritious portions are conveyed into the venous circulation, and, finally, in the lungs it undergoes its last stage of elaboration, and adds to the supply of arterial blood.

Throughout this process food acts as a stimulant to the glands and membranes connected with the digestive system; its ultimate destination is the circulatory system, whose losses it is required to supply. Physiologically, therefore, food excites secretion; improves the quality, and quantity, of the blood; and furnishes material for the support, reparation, and growth, of the tissues. Within certain limits these offices are performed with an energy directly proportioned to the amount of food supplied; thus a liberal diet is followed by activity of the nutritive functions, and excessive development of the structures; on the other hand, a meagre allowance necessitates defective deposits and emaciation.

By a selection of certain kinds of food, rich in a particular class of constituents, either the fatty or the azotized structure may alternately be made to preponderate, always in subservience to the peculiar aptitude in the system to develope fat or flesh out of the proximate principles supplied.

Both theory and practice justify the statement, that the nutritive functions are under great, almost entire control, and that, under a rigid system of dieting, the results may be predicated with tolerable certainty.

Food, like medicine, is capable of producing certain effects allied to the phenomena of disease.

When the quantity assimilated corresponds to the waste of the tissue, we recognise the legitimate end of the nutritive function—reparation.

When the quantity is excessive, if assimilation continue, the consequence is plethora.

If assimilation be arrested, various forms of disturbance follow the irritant effects of the undigested mass.

When the quantity is defective, the waste of texture is imperfectly supplied, and the result is emaciation.

When the quality is deteriorated, in consequence of the admixture of non-alimentary matters, various actions result, corresponding to the properties of the foreign bodies, varying, from simple defective nutrition, through various degrees of irritation, to absolute poisoning.

Therapeutic Action of Food.

After what has been stated upon the physiological effects of food, it is sufficiently obvious that those effects can be properly arranged in three groups, similar to those into which we have divided medicinal agents; we have, indeed, in the agents of an ordinary dietary, means of producing excess, defect, and, even perversion, and consequently to a certain extent of remedying those diseased conditions when they occur in the organism; accepting as an axiom the statement that the objects of medicinal and dietetic treatment are identical, whatever is sought in the employment of medicine shall also be sought in the arrangement of the diet, how far this rule is observed we shall have frequent opportunities of showing during our discussion of various portions of the subject.

Dietetics for Acute Diseases.

The necessity for supplying a certain quantity of nutriment to the system does not cease upon the occurrence of disease, although it may be considerably modified, at least for a time. This circumstance renders it advisable to decide upon the precise object desired, before any system of dieting be arranged. The simple inquiry, what is necessary? in refer-

ence to each case, would generally find an answer, and prevent a host of errors in the treatment of animals suffering under disease; applying this principle, we come at once to the question, What is the object of diet in acute affections?

In very few, perhaps in no instances, can it be said that food is at all indispensable to support the system; under the immediate disturbance of an active disease, aliment of any kind will stimulate, and consequently, unless absolutely necessary, had better not be administered at all; we can hardly understand that harm can result from a day's or night's abstinence, while we have often had reason to regret the consumption of too much when the digestive organs were unable to perform their office. We have probably no more safe nor direct sedative effect resulting from any system of treatment, than from total abstinence for a time; no more direct source of irritation than the introduction of a quantity of material into the stomach which is incapable of appropriating it. The anxious inquiry, "What will he eat?" applied to man or beast, is expressive of solicitude, which, however genuine, is unfortunate for the patient, as it commonly leads to the selection of tempting food, to excite an appetite which naturally would not return until the organism was again sufficiently reinstated to permit its indulgence with advantage. It may be accepted as an absolute fact, that under every form of acute disease, no benefit can possibly result from allowing the patient to eat at the commencement, even should a desire to do so be manifested; there is no immediate want of sustenance, and no debility will result from a temporary abstinence, although even were these consequences imminent, food would not furnish the means of prevention, as the impaired digestive action reduces it to the level of mere waste material, unproductive of any benefit to the system.

Our anxiety always is to remove every particle of food from the animal's sight for the first twelve hours of an acute disease, allowing only water, rendered medicinal by the admixture of some saline, such as nitrate of potash or the sulphate of magnesia or soda; by this plan we prevent an irritating thirst, and at the same time the too large consumption of fluid, thus made distasteful; while the quantity which the animal's feelings prompt him to swallow will act beneficially upon the secretions.

At the end of ten or twelve hours, a little hay, or green food, or carrots, or mash, may be offered, as the excitement of unappeased hunger would be injurious; but if the patient still manifest an indifference, the material should

be at once withdrawn; in this way, in the absence of appetite, an animal may safely fast for a considerable time, according to circumstances, until indeed the acute stage of the malady has slightly subsided, when the assimilative functions are partially restored, and food of a proper kind may be given with benefit.

The most succulent articles of diet are universally preferred for sick animals to dry food, even although the latter may be most nutritious; as the nutriment is not in so available a form we gain nothing by selecting it, while the moist diet is more easily masticated, besides being much less stimulating. For these reasons carrots or green food are desirable; the last, in particular, is usually very harmless, and tends to increase secretion by the amount of water it contains, besides acting beneficially by means of its saline constituents; the amount of nutritious matter contained in such diet is exceedingly small, but quite equivalent to the present wants of the system.

In the absence of succulent food, mashes are the nearest representatives, but as bran is irritating in some states of the mucous membrane, its use is not at all times allowable; where any contrary indications are present, flour gruel, or linseed tea, or a mixture of the two, will generally be taken by the patient with readiness, and will afford sufficient support to the system without causing any excitement of the membrane of stomach or intestines. It is hardly necessary to remark that succulent vegetables are not to be permitted in cases of diarrhœa, as their action is ordinarily laxative, in consequence, probably, of the quantity of water which they contain; nor, by the same rule, will carrots or turnips be legitimate diet during polyuria, as under any circumstances a diuretic effect generally follows their use, the white carrot we have noticed to be particularly active in this respect.

Against the system of abstinence at the commencement of an acute malady, it may be urged that the disease and the necessary depletive treatment will sufficiently weaken the patient, and that, supporting the body by nutritious food is the only method of compensation. It might be easily shown that the same objection would apply to any kind of depletive treatment; it is unfortunately true that we cannot attack acute diseases successfully without, to a considerable extent, lessening the tone of the system. If it were the case that nutritious food would furnish a remedy for this untoward consequence, without adding anything to the present excitement, we should be justified in defending its use, but as the system owes its support to the matter *assimilated*, and not merely to the food *swallowed*, we can hardly expect much

from the consumption of nutriment which the digestive system cannot appropriate; nor would it be consistent, even if it could, to allow a liberal diet, while our other therapeutic measures have a directly opposite tendency. The stomach would probably suffer in many cases if allowed to remain empty for any long time, from the solvent and irritating effects of its own secretion; hence a bland diet, easy of digestion, and not stimulating or highly nutritive is advisable; and upon it, the animal can well subsist until the organism is capable of assimilating its ordinary aliment. In some instances an extreme disgust at the sight of food compels the employment of force in its administration, a necessity which cannot but be deplored from the disturbance occasioned to an animal whose life almost depends upon perfect quietude; nevertheless, for the reasons given, some diet is necessary, and the only thing to be done under the circumstances is to administer it as carefully as possible, always remembering that a small quantity of aliment taken voluntarily will be more advantageous to the animal than twice or thrice the amount forced into the stomach. Linseed tea and gruels of oatmeal, beanmeal, or flour, according to circumstances, may be easily administered by the ordinary drenching horn, two or three times a day. Any medicines which the case may require will, as a matter of course, be given at the same time.

When from any causes, such as tetanus, throat disease, or extreme irritability of stomach, it becomes impossible to exhibit food by the mouth, we have recourse to enemata; animal or vegetable food in fluid mixture may be injected into the rectum; small quantities only are permissible, and consequently their more frequent administration is necessary.

Dietetics for the Convalescent State.

After the subsidence of an active disease the restoration to perfect health commonly proceeds with extraordinary rapidity, the appetite being often excessive and the assimilative powers proportionately active in such cases; little care in the arrangement of the food is necessary, so that a liberal allowance of nutriment be given. The ordinary provender will be eaten with avidity and with benefit, so that the animal be not allowed to eat to repletion. In other instances the patient advances slowly to the convalescent state, a fastidious appetite and impaired digestion retarding the recovery by preventing the animal eating, or at any rate appropriating, the material which the system really requires; the drenching horn we look upon as a last recourse. In the mean time the

patient's taste may be consulted, and any tempting morsels offered; the admixture of condiments is sometimes the most ready method of provoking appetite and aiding digestion; salt, turmeric, aniseed, and various spices are at different times effective in combination with the ordinary diet.

One golden rule deserves unceasing repetition, viz., never to leave any food which the animal has refused in his sight or within his reach; and second only to this maxim is another, which insists on scrupulous cleanliness in the hand which touches the provender and the vessel which contains it. Let those who question the necessity for such delicacy observe how the horse and other animals test everything by the sense of smell, and judge how important it is that the extreme sensitiveness of the sick subject should not be outraged by even an offensive odour.

When extreme debility is present, food must be selected with care, as the digestive function is easily disturbed. The diet for such cases should be tolerably rich in starch and sugar, as deficiency of reparatory material is often more serious than diminution of the muscular structure, hence the value of mixtures containing oil-cake, linseed, potatoes, and in human medicine various forms of farinaceous material or gelatine, which are erroneously called nutritious, but which, although wanting in this respect, are precisely adapted to that condition of system in which they are usually prescribed—a condition marked by a peculiar decrease of the fatty texture and extreme emaciation. The exaggerated statements of the effects of diet mainly constituted of gelatinous principles, such as a preparation of snails or oysters given in the treatment of consumption, owe their existence to the recognised benefits which follow the consumption of food capable of supplying the elements of fat, while the medicinal value of cod-liver oil, naphtha, and other hydrated carbons may be safely ascribed in great part to the same circumstance.

No amount of nutriment is of the least use to the organism so long as there is a deficiency of fuel for the respiratory function, as under such conditions healthy assimilation is impossible.

The development of the muscular system will follow as soon as the animal is sufficiently recovered to take exercise; during the period of absolute inaction we shall in vain try to preserve the integrity of this structure, but no difficulty is found in keeping up the proper quantity of fatty texture, or at least enough to afford an amount of reparatory material equal to the wants of the system, while the patient is yet too prostrate to be exercised with safety.

A suppurating surface of any extent is usually associated with considerable debility, sometimes with dangerous and even fatal prostration; the healing process may proceed satisfactorily for a time, and suddenly be arrested for a time, a general languor affects the system although the appetite may remain good. The proper dietetics in such instances will include not only nutritious but stimulating food; thus if the digestion remains active, crushed beans may be allowed, with oats, good hay, and any preparations containing condiments; the therapeutic treatment at the same time will principally consist of tonics and cardiac stimulants, the object being to increase the energy of the circulatory and nervous systems, as well as to furnish abundant material for the reparative process.

Under extreme prostration digestion is invariably suspended, consequently no advantage can possibly follow the introduction of food into the system at such a time, if we except aliment of the blandest and most soluble kind. The practice of giving a horse an extra proportion of oats, and probably beans, after an extra amount of work has produced absolute exhaustion, is, to say the least, extremely injudicious; the animal would be far better left entirely without, as an alternative, although, as we have stated, a bland soluble and diet, as well-cooked gruel, will be beneficial, and will answer all the purposes of a heavy meal, sufficiently stimulating the stomach without occasioning any unpleasant results.

From the few illustrations we have given, it will be seen how much depends upon the proper arrangement of the daily food. It is not within our province to discuss the principles of feeding, in reference to healthy subjects, but the line of separation between the healthy and the sick is occasionally so lightly defined, that it may be difficult to recognise it at all.

Many cases of deranged digestion, hardly deserving the name of disease, nevertheless account for emaciation and debility, even in association with a ravenous appetite and a liberal dietary. No delusion is more popular than the one which assumes that plenty of food, and good condition, are in the relation of cause and effect; how often do we find a subject improving upon a fourth part of the food to which he has just previously been accustomed, but which has been of literally no nutritive value, in consequence of derangement, apparently to a very slight extent, of the digestive functions. During inactivity a full diet, as a matter of necessity, leads to plethora, or else deranged secretion and debility; hence, even in *health*, the food should be carefully proportioned to the

actual wants of the system, while during the existence of disease the necessity for such arrangement is increased in proportion to the extent of the disturbance.

Popular ignorance of the laws which regulate the organism leads to certain fallacies in the arrangement of the dietary; for example—

The allowance of stimulating food to a patient suffering from an acute disease.

The use of a highly nutritious and probably indigestible kind of food for an animal prostrated by long-continued or severe exertion.

The system of supplying an abundance of azotised material in preference to carbonaceous in the cure of a debilitated and emaciated subject, whose respiratory function is gradually ceasing for want of fuel.

The practice of giving an excessive quantity of food when the object is to improve the condition, the system at the time probably not being equal to the appropriation of more than a third of the quantity of aliment supplied.

A proper appreciation of the principles of dietetics would lead the practitioner to estimate the arrangement of his patient's food as second only in importance to the surgical or medical treatment, and, instead of leaving the matter to the decision of the groom, to insist upon a rigorous adherence to his dietetic system as an essential part of the science of therapeutics.

(*To be continued.*)

ON CASTRATION.

By H. Daws, M.R.C.V.S., London.

The time was when the motto of *The Times* was, "Tempora mutantur et nos mutamur in illis," and possibly the same may be applied to the observations of the once enthusiastic individual who pens these few lines

As age advances, science rapidly oversteps empiricism, inhumanity, and barbarity, more especially in some of the principal operations which the professors of that art, said to be *second* to that of human medicine, but which I respectfully maintain *to be pre-eminent to it*, find frequently necessary to be performed upon their patients.

I would allude, in the present instance, to the operation of castration, which has for many years engrossed my attention.

Thirty years ago I saw it performed in a cruel and painful manner, and which I regret to say is not abolished at the present day, by tugging at the spermatic cord, after the testicle had been exposed, with a pair of tongs or clams—more like the ancient instrument of torture, the barnacles—and an iron reeking hot from an adjacent fire, used to sever it above the epididymis, and sometimes through a portion of it, with the fallacious idea of imparting courage to the animal. Then came the usual adjuncts of resin and melted lard, until an eschar had been produced over the blood-vessels.

I must candidly admit that I practised the same, but in a modified form, for some time.

The caustic-clams were favorite instruments with many, and are so now; but they entail an extra amount of labour upon the operator, and give a great deal of unnecessary pain to the patient; first, by their application, then removing, as some do, the testicles six hours afterwards, and the following morning the clams, thus making three operations where one would suffice, and forgetting the continuous pain the animal is suffering from the bearing down of the clams.

I have frequently witnessed the operation, but never practised it.

Castration by torsion was introduced to my notice by a gentleman who holds an important and deserving position in the profession, and I practised the same, with varied results, for some years; in fact, I made a communication in the shape of an essay on the subject, which was read before the *Veterinary Medical Association*.

I always entertained an idea of simplicity in all *necessary* operations, bearing in mind that I had an animal under my control who felt the same that I should myself under similar circumstances, and that I had no right to exercise any unusual degree of cruelty. I have therefore abandoned all my past modes and instruments, except a scalpel, and determined to operate in the more scientific way by ligature, which I have followed with success for many years, thus rendering the operation simple, and devoid of that brutal appearance which some of the other methods present.

My *modus operandi* has been to expose the testicle, and grasp it with my left hand, passing my forefinger through the cellular tissue connecting the vas deferens and the blood-vessels, then divide the vas deferens above the epididymis, when the testicle will lie flaccid, or it may be supported by an assistant; for by these means you have disposed of the antagonistic influence of the cremaster, endeavouring to retract it; and should the animal struggle, there is no necessity for

pulling and tearing at the cord. A ligature—of fine whip-cord I prefer—is now passed around the vessels and tightly tied, then the testicle is removed, leaving six or eight inches of the ligature attached to the knot around the cord, which separates from its attachments in the course of from eight to eighteen days. In the mean time, the ends, from their length, keep the orifices in the scrotum open, so as to allow of the free exit of the secretion from within.

I will not go the length that many do to assert that no consecutive inflammatory action supervenes after some of these methods have been adopted, because no reasonable educated man can deny the fact that it is essentially necessary to promote the healing process.

The after-treatment, with unbroken colts, may be entirely dispensed with, their exercise in the strawyard and meadow being all that is required.

With those horses that have been more highly domesticated, a previous preparation, both before and after the operation, is necessary, by restricting the full diet, and instituting one of a laxative character, with the usual amount of walking exercise, combined with occasional ablutions.

I do trust that the time is not far distant when the cautery will be entirely abolished from practice in this as well as in other manipulations, for even its application to the extremities, in the indiscriminate manner it is applied, is productive of no real benefit. It only compels proprietors to give their animals a greater amount of rest, for effecting a benefit to lame horses, than otherwise they would do.

ENLARGEMENT AND TUBERCULIZATION OF THE PLEXUS CHOROIDES.

By J. Vick, M.R.C.V.S., Gloucester.

On Friday last, Mr. Holford, an agriculturist, from the neighbouring county, Worcestershire, came to me, stating that he had a young and valuable horse lying dead at an inn in this city; that the horse was ridden in about ten miles in the morning, and he believed him to be then perfectly sound and well. He had had him in his possession about fourteen months, and that he wished me to make a post-mortem examination of him. The ostler stated that he found the horse dragging back in the stall; he rushed to the halter and cut it, when the animal immediately expired.

On opening the horse, I found all the abdominal viscera perfectly healthy, and a small quantity of food in the stomach, which he must have eaten after his arrival.

On opening the chest, the lining membrane and pleura pulmonalis appeared healthy; but on cutting into the lungs, I found them very much softened and easily broken down under pressure of the fingers. The heart was also softened. These changes not being sufficient in my mind to cause the sudden death of the animal, I naturally examined the brain, thinking to find a cause for apoplexy. On taking off the bony covering, the meninges of the organ appeared to be quite healthy, and its substance only showed slight congested spots; but on opening the cavities, I found an effusion of serum to exist, and, what I have never seen before, tuberculization of a considerable portion of the plexus choroides.

REMARKS ON THE ABOVE CASE.

Fully to understand the cause or causes which may have produced the death of an animal, it is important, in many instances, although not in all, to have either witnessed or received an authentic account of the history of the case, and also the symptoms observed previous to death. Such information, coupled with the post-mortem appearances, materially assist in coming to a definite conclusion. Unfortunately, however, in the above case, we are not in possession of such knowledge, nor does it appear, as far as symptoms are concerned, that Mr. Vick had any idea what they were; we therefore feel less confidence in any opinion we may offer, and we are inclined to think that Mr. Vick was a little too hasty in the conclusion he came to. The owner of the horse, we are told, considered him to be in good health up to the time he placed him in the hands of the ostler of the hotel, and judging from the statements in Mr. Vick's letter, the ostler could not have paid much attention to the animal until the moment of his death, therefore was not in a position to say whether the horse was unwell immediately after being placed in the stables of the hotel, or if the symptoms of the disease which caused death suddenly appeared.

This we take to be important; for if it could be shown that his respiration was embarrassed a short time after he was admitted into the stable, and, in association with other peculiarities, continued to be so, then, under such circumstances, we should be able to assert that his lungs were congested, and that such was the cause of death; which we really think is more likely to be the case than its depending upon en-

largement of the plexus choroides. With reference to these structures, it is no uncommon thing to find them tuberculated from deposition, and their size increased thereby to an extent many times larger than those sent to us by Mr. Vick, without ever having produced any observable inconvenience to the horse they belonged to.

We do not say that it is not possible for these abnormally enlarged bodies to have had something to do in causing death in this instance, but we nevertheless think it highly improbable.

The enlargement alluded to in each plexus does not exceed that of a common horse-bean, and is perhaps not quite so large.

MESENTERIC HERNIA IN A FILLY.

By E. J. King, M.R.C.V.S., Diss.

(A Communication to Assistant-Professor Varnell.)

My dear Sir,—I have sent for your perusal the particulars of a case of mesenteric hernia in a two-year-old filly, which I was requested to attend on Friday last, supposed to be suffering from colic.

She had been turned out with some others in a meadow, and was first observed to be in pain about 7 p.m. Her illness was communicated to her owner, who immediately ordered her to be sent home, and I was summoned to her, and arrived about 9 p.m. The following symptoms were then present:—Acute abdominal pain, evinced by constantly throwing herself down, and making attempts to roll over; looking backwards towards her flanks, and when standing up, often placing her haunches against the wall or manger, and pushing backwards. This was a peculiarity I never before remember to have observed in a case of supposed colic. Pulse 70 to 80, and oppressed; visible mucous membranes injected; mouth hot and dry, and breath fœtid; breathing laboured, and at times distressed. The attendant told me she had passed fæces on her way home, a distance of about two miles, and the bladder was relieved in my presence.

Diagnosis.—Spasm of the bowels, in association with strangulation.

Treatment.—Antispasmodics, with fomentations to the abdomen, followed by a blister; enemas were also employed,

but without the slightest abatement in the symptoms. She died about four o'clock on Saturday.

Post-mortem examination.—Every organ was healthy except the ileum, which had quite an altered appearance, no doubt from a congenital malformation. The mesentery was ruptured, and a pendulous portion of the bowel had passed through the opening and become strangulated. The lesion existed about four feet from the terminal portion of the gut.

I laid open the intestine to examine the pendulous portion, and also to see whether there was a calculus, but found only a few pieces of grass in it. At the extreme end there was a small abscess, out of which about a teaspoonful of dark-looking pus escaped on puncturing it.

The rupture in the mesentery through which the ileum had passed was not very large.

Believe me,
Yours faithfully,
EDWARD JAMES KING.

To G. W. VARNELL, Esq.

ON CASTRATION.

By F. F. S. CONSTANT, V.S., Bombay Horse Artillery, Camp, Hyderabad, Scinde.

IN the *Veterinarian* for 1859, I noticed an article on the method of castration by means of "scraping the cord," with respect to which I wish to be permitted to make a few remarks, at the same time to communicate to you my mode of performing that operation.

It has always been my aim in practice to perform such and similar operations in a manner least likely to disturb the system, and to avoid giving the animal unnecessary pain; therefore with reference to the method described in your journal (No. 374), I wish to state that, in my opinion, I consider it is attended with too much suffering to the animal, while in itself it is a cruel and unscientific method, and only worthy of the charlatan. Moreover, it is likely to be followed by serious results, and I feel convinced that these would have taken place had not nature endowed the animals on whom it was performed with more tenaciousness of life than many others.

I think the best and safest mode of performing the opera-

tion is the following, and the reason of my submitting it to the notice of the profession is, I have never seen or heard of its being performed in the way I perform it. I have always pursued it in my practice, and have never experienced any inconvenience from it, although I have castrated a good many, and at all ages. I likewise consider it to be, of all the methods that are had recourse to, one most unlikely to be followed by any untoward event, and also least calculated to give pain to the animal.

Operation.—Having cast the animal, and secured him in the ordinary way, and being provided with the necessary instruments, viz., one scalpel, one pair of crooked scissors, two dissecting forceps, and the iron clams, and, in case an artery has been cut too short, a little thread for a ligature, the operator thus proceeds:—The right testicle is taken in the left hand, and is secured between the thumb and forefinger, thereby rendering tense the scrotal coverings. An incision is now made through the integument and subjacent tissues to the testicle, without wounding the gland; the incision is then more conveniently lengthened by means of a pair of crooked scissors, and thus the violent pain, which would be produced were the testicle wounded by the knife, is avoided. The gland is then taken in the left hand, free of all its heretofore coverings, and after disconnecting the vas deferens, the iron clams are adjusted with the right hand, at a short distance from the gland, according to the judgment of the operator, whilst an assistant is holding the clams to prevent tension being applied to the abdominal portions of the cord. The operator makes that portion of the cord in direct connection with the gland slightly tense, which he cuts through with an ordinary scalpel, a short distance from the gland; after removing the refluxed blood, the arteries are sought for and taken up, and if the gland has been properly removed, the vessels can be drawn out sufficiently to admit of a knot being made in the ends of them by means of two forceps. The same having been done with the left testicle, the animal is allowed to rise. Nothing further requires to be done: the animal gets his exercise morning and evening. When pus begins to form, which it soon does, the parts only need to be kept clean, so as to allow free exit to the discharge, and in ten or twelve days the animal is perfectly fit for duty.

For about four days prior to the performance of the operation the animal is kept on bran mashes and green grass; and when suppuration commences, I gradually return him to his full feed again.

The above method of operating being so very simple in

itself, admits of its being done in a very short space of time, and with the loss of only half an ounce of blood.

I shall have some further remarks to make on other methods of performing the operation, and which I consider equally objectionable, but these I must reserve for a future period.

I have also some interesting cases which I intend sending you the full particulars of, but as time will not permit my enclosing them now, they must form the subject of other letters.

SPASM OF THE MUSCLES OF THE LARYNX AND NECK, CAUSING ASPHYXIA AND DEATH.

By R. G. Walters, M.R.C.V.S., Newport, Salop.

On the 14th of February, 1861, I was requested to see a horse, the property of the Lilleshall Company, Donnington Wood. He was a powerful cart-horse, about 16½ hands high, five years old, and had been attended by a member of the profession about two months before for influenza, the horse being some miles from home. It was at the expiration of this time that he was brought home, and I was requested to see him.

Symptoms present.—Pulse 40, the breathing natural, ears and legs warm. He was in good condition, and would eat anything that was placed before him. There was no soreness of the throat, nor any discharge from the nostrils, and I could not make him cough. On inquiring of the man, I ascertained that about a fortnight previous they put him to work, but he had not got many yards before he staggered and fell, and seemed to be dying for want of breath. In this state he continued for about ten minutes.

After hearing this, I ordered him to be trotted round the yard; but he had not gone twenty yards before he stopped, and began to bellow like a cow; the mouth and nostrils were wide open, the pulse rose to 120 and 140 beats in the minute; perspiration poured off the body, and the muscles of the neck became quite rigid.

Treatment.—I at once opened the trachea, and introduced a tube of gutta percha, which they happened to have by them, in the opening made, and ordered him to be kept perfectly quiet. Within a quarter of an hour he was quite calm, and eating as usual. I blistered the throat and face, and gave a fever-ball night and morning.

Feb. 17th.—The horse eats well, and has not had another attack. Keep him quiet, and allow plenty of mashes, &c.

20th.—He appears in the same state as at my last visit. I had him taken out again, and walked once round the yard, when he was again attacked; and although the tube was in the trachea, the spasms continued for half an hour, and the horse seemed to be dying; he, however, soon recovered. I now determined to trephine the frontal sinuses, and likewise passed a tube up each nostril, but nothing abnormal could be detected. Again blister the throat and face, and keep the animal quiet.

25th.—The pulse is natural, and the appetite good. I ordered him to be turned out for a few hours after I left; and on the 26th he was turned out again, but a short time after he was found dead in the field, the tube having fallen out of the trachea.

28th.—*Post-mortem examination.*—On opening the trachea as far up as the larynx, I found the whole of the mucous membrane highly inflamed. The inflammation extended to the opening of the œsophagus, the whole of the fauces, and along the nasal cavities, where I found one or two ulcers. On opening the frontal sinuses, there was an abscess, about the size of a goose's egg, underneath the mucous membrane, and partially embedded in the ethmoidal cells. On puncturing it, a muco-purulent fluid, fœtid, and of a greenish hue, escaped. On opening the lachrymal sinus, I found it highly inflamed, but there was no abscess. The whole of the viscera of the chest and abdomen were healthy, as also was the brain.

I do not remember having seen recorded a case similar to this, as following influenza or any other disease of the head or air-passages; and such, therefore, in my opinion, ought to be given publicity to through our valuable journal, so that we may be able to ascertain the seat of disease, and thus treat such cases successfully. Although I had trephined the frontal sinuses, I happened to be a little below the abscess, and consequently considered them not to be implicated.

CANCEROUS TUMOUR IN A DOG.

By C. J. Dring, M.C.R.V.S., Bath.

I have forwarded for your inspection a morbid specimen taken from a valuable dog, six years old, cross bred between

the setter and pointer, the property of H. Lyne, Esq., Keynsham. The animal was sent to my infirmary last week, the servant stating that the dog had been ill about two months, and was supposed to have worms, for which some medicine had been given him. The symptoms which presented themselves were an extremely emaciated condition, the respiration occasionally excited, but not laboured, at other times tranquil; pulse quick and weak; the abdomen tucked up, tense and hard to the feel; appetite pretty good. On more carefully manipulating the abdomen, I could feel that I was enabled to move something of large size backwards and forwards, and which appeared to occupy nearly the whole of that cavity. The owner of the dog called in the course of a few days, when I informed him that it was my opinion a tumour existed in the cavity of the abdomen, and that nothing I could do would be likely to afford any relief to the animal, as I feared the consequences of an operation, from its size and situation, and therefore advised that the dog should be at once destroyed, with which the owner concurred.

Post-mortem appearances.—On cutting open the abdomen, I observed a large tumour, weighing 3½ lbs., occupying the greatest portion of that cavity. It was lying somewhat obliquely across the spine, resting upon the stomach, covered by the omentum, and attached by its peduncle around the aorta, near to the opening in the diaphragm. The stomach and intestines were healthy. The liver was natural in colour, but contained several tumours about the size of marbles; one, however, was as large as a pigeon's egg. The lungs were pale, and contained many of these tumours, varying in size from a pin's head to a marble. The tumours in the liver and lungs appeared to be made up of the same peculiar structure as the one I have forwarded to you.

If you think the case of any interest, I should feel greatly obliged by your opinion as to the nature of the disease, through the medium of your journal.

[The tumour forwarded by Mr. Dring consisted of a mass of cancerous matter, involving the mesenteric glands. Softening had taken place here and there, and collections of pus were likewise met with in various-sized cysts in the interior of the tumour. The appearances, on the whole, however, differed but little from ordinary cancerous deposits as met with in the dog.]

GRASS-STAGGERS IN CATTLE.

By A. J. M'Intosh, Student, Edinburgh Veterinary College.

As this is a disease exceedingly prevalent in some districts during the months of May, June, and July, and attended with considerable loss to the owners of cattle, I may be allowed to make a few remarks on it. But, before doing so, I shall mention the history of two cases that came under my notice while with Mr. Paterson, veterinary surgeon, Dumfries.

Case 1.—On the 17th May, I was requested to attend a two-year-old bullock, of the Galloway breed, the property of a gentleman in the neighbourhood. On arriving at the place, I found the animal standing in the farmyard, to all appearance in a very hopeless condition.

On making some inquiries, I found that he had been feeding, along with a number of others, in a field of young rye-grass; and about three hours previous to my arrival, he was seen standing in a corner of the field, apart from the rest, neither feeding nor ruminating. He was with great difficulty got home, as he reeled and staggered much, and fell against everything that was in his way.

On examination I found him completely blind, the pulse 80 per minute, and strong, the respiration a little hurried, the abdomen tucked up, the eyes glassy, occasional grinding of his teeth, with a flow of frothy saliva from the mouth.

I had him at once taken into a house, bled him freely, gave a dose of purgative medicine, ordered cold applications to the head, and enemata to be thrown up till the medicine operated.

I had not an opportunity of seeing him again, as he died the following day; and being otherwise engaged, I was not able to make a post-mortem examination.

Case 2.—On the 20th May, Mr. Paterson was requested to attend some cows, the property of a farmer, a few miles from town. I accompanied him to the place, and on our arrival we found three cows dead (these being all that were affected), and the owner, along with others, was in the act of burying them.

Very fortunately, however, the one that died last remained

untouched. A farrier had been attending them, and he told us that "they had been poisoned, as sure as ever a beast was poisoned."

On inquiring into the state of the animals while labouring under the disease, the owner informed us that the first one was noticed to separate from the rest while in the field, and seemed dull and not feeding.

On attempting to take her home, he was surprised to see her reel and stagger like a person drunk. He, with some difficulty, got her home and put her into a house, where she continued to get worse till she died. She champed her teeth a good deal, and also foamed at the mouth.

On the following morning (being the day on which Mr. Paterson was sent for) the other two became affected. These were at pasture also, and showed all the symptoms of the first, but in a more aggravated form. They were both blind, and staggered so much that they could scarcely be got home. One of the cows was purging, which act sometimes accompanies this disease.

On examining the pasture on which they had been feeding, nothing could be found to cause death by poisoning. It was a field of young rye-grass, and a considerable quantity of it shot.

I then made a post-mortem examination of the one that died last; and on laying open the abdomen, I found the intestines all in a normal state, with the exception of about two inches of the jejunum, which presented a slight blush of inflammation. The rumen contained no unusual quantity of ingesta, which consisted chiefly of half-shot rye-grass. The reticulum appeared to be perfectly healthy. The contents of the omasum seemed rather dry and impacted; that of the abomasum were fluid, and of a darker colour than ought to be, but no inflammation existed in any of the stomachs.

I next opened the cranium and removed the brain, when the results of the disease were very evident. The pia mater was very much injected, and several spots of extravasated blood existed on the surface of the brain. I had a coloured drawing taken of it very shortly after it was removed, which I forward with this communication for your inspection. It conveys a very correct idea of its appearance.

On the base of the cerebrum (which cannot be seen in the drawing) were several small spots of extravasated blood, and around them the inflammation had extended into the substance of the brain. Also on the left hemisphere of the cerebrum, at its lateral side, where it rests on the suture formed by the junction of the frontal and parietal bones, a considerable amount of extravasation had taken place, and

the substance of the brain was highly inflamed. The cerebellum was darker in colour than it ought to have been, but the inflammation had not extended to its substance. All the other organs appeared to be perfectly healthy.

There was no difficulty whatever in coming to the conclusion that all the three were cases of grass-staggers.

Remarks.—I believe this disease to be almost entirely confined to animals feeding on young rye-grass. I have seen a great number of cases, both last year and this, and every one of them occurred on that kind of pasture. I have never known it to take place on old pastures, unless in animals in very poor condition, and which had been changed from poor to a rich pasture; and I am inclined to think that it is not often a result of this. Where the disease has existed, and the unaffected animals are removed from the rye-grass to old pasture, all that is required is done to prevent any more attacks occurring.

I believe this disease to be of more frequent occurrence in the south of Scotland than in any other part of this country, which I think it can only be accounted for in this way. In laying out the pasture, the only seeds used are the perennial rye-grass, in combination with a small quantity of red and white clover-seeds. Now, in summer, when cattle are put to feed on this kind of pasture, any clover present is soon eaten up, and then the rye-grass is the only food left for them.

It soon begins to shoot, and being taken into the stomach in that seedy and indigestible state, acute dyspepsia is soon set up, and as a result the brain becomes affected, owing to the great sympathy that exists between the stomach and that organ. It is then that the true nature of the disease becomes apparent.

Horses and sheep are also the subjects of this disease; but in the former it does not occur so often as in cattle, nor is it so fatal.

The symptoms are not in every case exactly the same, although they are so obvious that the disease need not be mistaken for any other. The animals generally become affected while at pasture, and are first noticed to be in a dull state and apart from the rest, standing with their legs drawn under the body, and the nose generally a little protruded. Purging is sometimes present, but by no means invariably. The pulse generally ranges from 70 to 90 in the minute, although in some cases it is not much accelerated in the first stage of the disease. The sight, in most cases, is entirely lost, and the eyes appear dull and glassy. There is a continual flow of

frothy saliva from the mouth, and occasional fits of grinding the teeth. If the patient is a milk-cow, the secretion of the milk will be greatly suspended, and in some cases it will be completely stopped. As the disease advances, the patient either lies down in a state of coma, or frenzy sets in. The former is the most common, the animal lying with the head turned round on the shoulder, and continuing in that state till it dies.

The only treatment from which I have seen any good result, consists (if the patient be not too much exhausted) in free bloodletting, which must be regulated according to the state of the pulse. The bowels must be opened; and, to accomplish this, a dose of brisk purgative medicine should be given, along with some stimulant. A seton or a blister may be applied to the back of the head, or perhaps both. Enemata should be thrown up occasionally, till the medicine operates, and laxative agents should be exhibited afterwards, to prevent the bowels from again becoming constipated. When the patient begins to recover, tonic medicines should be administered. Mr. Strangways, Lecturer on Anatomy in the Edinburgh Veterinary College, recommends sulphuric acid, in half-drachm doses (fluid), well diluted, as a valuable tonic in such cases. The animal should also have given it some gruel, along with half a pound of treacle, two or three times a day, and a little cut grass as soon as it is inclined to feed. When the disease begins in a stock, I would recommend a change of pasture, which will almost always put a stop to its spreading further.

Facts and Observations.

POISONING WITH COLCHICUM AUTUMNALE.

Mr. Whitemore, M.R.C.V.S, Shepton Mallet, states that recently he was called upon to attend some heifers that had been poisoned by eating the meadow saffron. Eighteen were affected, and four had died before he was called in.

The symptoms presented were—rumination ceased, eyes sunk in their orbits, pupilary opening enlarged, coat staring, body cold, pulse imperceptible, violent purging, grinding of the teeth, moaning, frequently lying down, kicking at the abdomen, intense pain, and loss of power of locomotion.

His treatment, which was successful, consisted in giving repeated doses of linseed oil and tincture of opium, with large quantities of demulcents, in the form of gruel and infusion of linseeds.

PORTABLE HORSE VAN.

Mr. G. Cooke, M.R.C.V.S., Newcastle-upon-Tyne, informs us that he has successfully adopted the use of a portable horse van,' drawn by two horses, for the removal of sick or lame horses from any reasonable distance to his infirmary, which he finds of great service, since the accommodation for sick animals he says is often but poor, and better attention can be given to them at home than when they are located miles off. He relates two or three cases the favorable termination of which he attributes in a great measure to his being able, by this means, to have them under his immediate superintendence.

DETECTION OF CASTOR OIL IN THE VOLATILE OILS.

Volatile oils, from their expensiveness, are often adulterated with other oils; these being either fixed, as castor oil, or volatile, as oil of turpentine, and likewise with alcohol. The detection of the last named is easy enough, while the presence of turpentine may be known by its smell. As castor oil, however, is soluble in alcohol and all other menstrua which dissolve the volatile oils, adulteration with it is not so easily exposed. Mr. H. N. Draper, F.C.S.L., states, in the '*Dublin Medical Press*,' that he has been able to detect the admixture of five per cent. castor oil in volatile oils, by the production of *ananthylic acid* ($C_{14}H_{13}O_3 + HO$) from it by the action of nitric acid.

His method is as follows:—Twenty drops of the suspected oil are placed in a small porcelain capsule, and heated in a sand-bath until the odour of the oil is no longer perceived. To the residue, if there be any, add five or six drops of nitric acid, and as soon as the action has subsided, dilute with a solution of carbonate of soda. If castor oil be present, the odour of ananthylic acid will be at once perceived, and this, once smelled, is not likely to be mistaken for any other substance. Should it, however, be the case that the party is not familiar with the odour, it would be as well to make the experiment first with castor oil alone.

VAPOUR OF TURPENTINE AN ANÆSTHETIC.

Mr. WILMSHURST, M.R.C.S., in a communication to the '*Lancet*' states that, in the absence of chloroform, he has successfully used the vapour of the oil of turpentine for the purpose of allaying pain, and inducing anæsthetic sleep. The composition of oil of turpentine, will in a great measure account for its thus acting, but experiments are wanting to confirm its perfect substitution. These, however, from the agent being so cheap and easy of application, might be easily performed, especially on the lower animals.

ABYSSINIAN REMEDY FOR TAPE-WORM.

Dr. COURBON, in an article on the tænifuges of Abyssinia, in the '*Pharmaceutical Journal*,' states that the bark of the *messena*, an indigenous leguminose tree, is perhaps the best tænifuge, as it removes most completely the *tænia solium*, acting upon the parasite in a peculiar manner. After its ingestion, the worm is voided in fragments; and the inhabitants are not required to repeat the dose every two months, as they do the koussa. It is entirely tasteless, creates no nausea, nor does it produce any pain, or cause any derangement of the ordinary functions. The following day, either in the morning or evening, the greater part of the worm is thrown off in a sero-mucous evacuation. The quantity given is large—15 to 20 drachms; but it is thought that the active principle resides in an alkaloid which might be extracted by chemical means.

PLEURO-PNEUMONIA IN AUSTRALIA.

IN our last we recorded that the government of Australia had introduced a bill authorising strict measures for the prevention of this disease. The *Melbourne Herald*, in its summary for the past month says:—"Of practical legislation during the month there has been an utter void, if we except one bill, the Pleuro-Pneumonia Bill, which has received the Governor's assent, and been put into operation. The bill authorises the destruction of diseased cattle, but if destroyed, and not found to be diseased, the owners can claim compensation under government."

THE VETERINARIAN, AUGUST 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —CICERO.

ON THE PHOSPHATES IN ORGANIC BODIES.

NATURE, ever wise in all she does, has so apportioned certain principles in the cereals as to render them most conducive, as articles of food, to the well-being of man. Man, often unwise, too frequently through caprice and fashion removes some of these principles, and suffers in health accordingly.

Of late years *white* bread has taken the place of *brown*, and this frequently to the impairment of the digestive organs and the loss of sustentation of certain parts of the system. The bran which is removed from the flour, to render the bread whiter, contains a large quantity of the phosphates, and these are indispensably necessary to the normal constitution of several of the tissues of the body, as well as for the formation of muscle-fibre, the brain and nerves, and likewise the bones. To obviate the evils resulting from this abstraction, Professor Horsford, of Philadelphia, has proposed to make a bread for domestic purposes which shall contain a compound similar to that furnished by nature. After a trial of several expedients, nearly all of which failed entirely to meet his views, he came to the conviction, to use his own words, "that if it were possible to prepare phosphoric acid in some form of acid phosphate of lime, such that, after its action with moist carbonate of soda, it would leave phosphate of soda (a constituent of the blood) and phosphate of lime (an essential constituent of food), and confer upon it the necessary qualities of a dry, pulverulent acid, the end would be so far attained as to justify a practical experiment in domestic use."

Such a compound, the formula for which, however, is not given, has been for years consumed by his family, he says, and among his friends, and is now finding its way throughout the country, under the name of "YEAST-POWDER," to a

"very large extent, settling, in the most satisfactory manner, all questions as to its serviceability and healthfulness.

"Dr. Samuel Jackson, professor of the Institute of Medicine in the University of Pennsylvania, gives the following testimonial in support of these views:

"'Your substitute for cream of tartar for the raising of bread is a decided improvement. The tartaric acid is not a constituent of the grains from which flour is made; it is not a nutritive principle, and often disagrees with the alimentary organs. The phosphate of lime, which is the principal ingredient of your preparation, is an essential constituent of all grains. It is further an important nutritive principle; and recent experiments have proved it is an indispensable element in the construction, not of bones only, but of all the animal tissues. A deficiency of the phosphate of lime in food is a common cause of ill health, of defective development, and retarded growth in children. In the conversion of wheat into flour, the phosphate of lime is rejected with the bran; and, in consequence, this necessary element of nutrition, contrary to the arrangement of nature, is not obtained from our fine wheat-bread. Your preparation, while it makes a light, sweet, and palateable bread, restores to it the phosphate of lime which has been separated from the flour, and thus adapts it as an aliment for the maintenance of a healthy state of the organisation.'"

The necessity of combinations of phosphorus existing in the organism being thus shown, its presence is to be sought for first in the vegetable, which necessarily derives it from the soil. Lava has been said to be rich in phosphoric acid, and it has been also found in rocks of igneous origin, probably in combination with alumina. These becoming disintegrated and strewed over the earth's surface, yield up this constituent to the growing plant.

M. B. Corenninder, in a series of articles in the *Chemical News*, on the migrations of phosphorus in vegetables, says,—

"If we look upon the cellular and fibrous tissue as constituting the skeleton of the plant, it is strange that no phosphates are found after merely washing it with cold water. If the conclusion were not hazardous, it might be said that the bones of animals and those of plants, notwithstanding the essential differences which distinguish them, present

still this similarity, that the first owe their solidity to earthy phosphates, and the latter to silica and lime. Whichever way it is, the phosphates are certainly contained in the juices, and not the bodies, of plants. In removing the nitrogenous matter from plants, the phosphates are also removed, which, I repeat, have an existence independent of the organs, and circulate in vegetables to produce phenomena of a higher order.

"Some time ago, M. Payen proved that the nitrogenous substances of plants have a separate existence from the tissue. This eminent chemist has succeeded in dissolving animal matter by alkalies, without producing the least rent in the organs.

"The dry leaves which remain in the forest during the winter give an ash, rich in iron, silica, and lime, but destitute of phosphoric acid."

M. Corenninder adds—

"The large proportion of phosphates which are found in the ashes of seeds has induced me to look for it in the pollen-dust of flowers. A first trial upon the pollen-granules of the white lily taught me a fact which I consider of interest: it is, that these small organs contain a large proportion of phosphoric acid, larger even than that found in a grain of corn. The pollen of the lily gives a black ash, difficult to obtain, like that of cereals; it is very alkaline, and contains but little lime, magnesia, chlorine, and silica; it is formed, so to speak, entirely of alkaline phosphates. I have found in 100 parts of pollen, in a normal condition,

Phosphoric acid . . 1·45 per cent.

"It must be remembered that Vauquelin has shown that the semen of animals contains also a large proportion of phosphorus. This similarity between two bodies which exercise the same functions in the two kingdoms is worthy of attention; and, what gives still more interest to the remark is, that the semen gives equally a black ash, alkaline, but containing very little lime, magnesia, or silica, &c. The proportion of lime is, however, larger than in the pollen of flowers. The ashes of the spores of the Lycopodium *(Lycopodium clavatum)* also contain phosphoric acid in considerable quantity. In 5 grammes of the substance, perfectly pure and in the normal state, I have obtained

Phosphoric acid . 0·92 per cent.

The ash of these spores has, in other respects, the same appearance as that of pollen; and, like the latter, they are characterised by an absence of lime, silica, and magnesia.

"The presence of so large a quantity of phosphorus in these fluids, and those mysterious organs intermediate between the life which is about to cease and that which is about to commence, affords material for much reflection. One cannot repress a feeling of profound admiration upon seeing this body, gifted with such energetic properties, assist in all those functions whereby the being is perpetuated or existence transmitted."

"M. Barral has made the important discovery that rain-water contains a notable quantity of phosphoric acid. He evaporated to dryness in a platinum vessel 1295 litres of rain-water collected in Paris, and 390 litres collected at Brunoy. The first yielded 22·6 milligrammes of dry residue per litre, and the second 7·8 milligrammes. The phosphoric acid obtained varied from 0·05 milligrammes to 0·09 milligrammes per litre. From these results, M. Barral calculates that rain-water may bring annually about 400 grammes of phosphoric acid to the hectare of soil. The author supposes that the phosphorus exists in the atmosphere in the form of phosphate of lime carried by the wind as dust; and also, perhaps, as phosphuretted hydrogen, the product of the putrefaction of animal matters. Another source may be the minute organized beings which MM. Bineau and Pasteur have shown to exist in the atmosphere."

The origin of the *phosphates* in the animal, it has been stated, may be ultimately traced back to the mineral kingdom. Thus a native phosphate of lime occurs crystallized in the mineral called apatite, moxorite, and asparagus-stone, which is found in Devonshire and Cornwall, in the form of a six-sided prism, phosphorescent and of a green colour. It also occurs in volcanic products, as before observed, and in those substances known by the name of *coprolites*—the remains of carnivorous reptiles met with largely in the Lias formation, and now so very commonly used for manure, instead of guano.

While speaking of the evil attendant on the withdrawal of the phosphates, we take leave to allude to another fact, namely, the desirability of making the leguminous tribe of seeds more common constituents of our food and that of

animals. Our readers will remember the result of the four Jewish youths, who, at the request made by Daniel, were fed on pulse (peas and beans) to eat, and water to drink—that "their countenances appeared fairer and fatter in flesh than all the children which did eat the portion of the king's meat."

We are quite aware that it has been said such seeds are very likely to be productive of skin diseases, either from the sympathy which exists between the common integument and the stomach, or from continuity of membrane. Yet we think much of this may be referred to habit; while we are convinced, that from a mixture of the vegetable principles a great amount of good would be obtained. Still, in this as in everything else, judgment is to be exercised. The advantages to be derived from a mixed diet are so patent as to need no comment. There is likewise a needs-be for combining, in our ordinary diet, vegetable matters with animal substances. The object science ever has in view is to explain the facts which experience has developed, and to ascertain the governing laws, so that principles may be our guide, rather than custom or conjecture. By experience we know that butter with bread is nutritious, in the popular sense. Science tells us the "why and the wherefore;" namely, that amylaceous matters are more readily transformed into fat if eaten with a little fat in some form, than if they are eaten alone. We partake of a little cheese at dinner almost from custom; science, however, tells us that it promotes digestion by inducing catalytic action. Again, we add salt to our food, not merely because it imparts savour to it, but because it furnishes one of the constituents of the gastric juice. Eggs and milk are proverbially nutritive, simply because they contain all the elements necessary for the maintenance of life, these being in the form of proximate principles or otherwise. Chemistry also assigns the reason why the Laplander luxuriously feeds on oil and grease, whilst the inhabitants of tropical climates prefer cooling and refreshing fruits. Thus it is that the utility of science becomes demonstrated; for "truth is *one*," however varied its forms may appear.

THE MEETING OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

ASSOCIATED as our profession necessarily is with the agricultural community—and the more intimate this union is the greater will be the reciprocal benefits—it cannot but feel an interest in the meetings of the different Agricultural Societies; and as that of England is, while we write, taking place, we have thought the following brief history of its beginning and progress, taken from a contemporary, might prove acceptable to our readers.

"During the week commencing on Monday, 15th July, the twenty-second annual meeting of the Royal Agricultural Society of England will be held in the capital of the West Riding. Up to 1828 there was no Agricultural Society of England. In 1733 was established in Scotland a "society of improvers in the knowledge of agriculture," whose work chiefly lay in "improving and cultivating grasses and turnips." In 1783 the excellent Highland Society of Scotland was formed, and it has been most truly stated that "the epoch from 1795 to 1814 exhibits an era unexampled in the history of improvement in any country." Scotch farming became proverbial for its goodness, cleanliness, and its profits. In 1779 the Bath and West of England Society was established. The success of the Highland Society, and the interest caused in England by its operations, led the late Earl Spencer to exclaim, 'Why not one for England?' Of that interrogation, extorted by a pardonable feeling of envy, was the Royal Agricultural Society of England conceived and born. The society was begun in June 27, 1838, and incorporated March 26, 1840, the royal charter being granted to the Dukes of Rutland, Grafton, and Sutherland, the Marquis of Downshire, Earl Spencer, Sir James Graham, Mr. Joseph Neeld, Sir Thomas Acland, and others. The first meeting was held at Oxford, in July, 1839, and, as far as cattle went, was a great success, 'the fruitful mother of one-and-twenty more.' Next year the agricultural peripatetics went Cambridge, and then visited in succession Liverpool, Bristol, Shrewsbury, Northampton, York, Norwich, Exeter, Windsor, Lewes, Gloucester, Lincoln, Carlisle, Chelmsford, Salisbury, Chester, Warwick, and Canterbury. It was in

1841, at the Liverpool meeting, that the first amazing innovation in agricultural science was exhibited—a portable steam-engine for thrashing corn. Twenty years only have elapsed since that time, and the catalogue of 1861 occupies 350 pages, mainly with descriptions of 5000 agricultural implements, many of them of very recent invention. This fact will give a tolerable notion of the extent of this year's exhibition as regards the implements only. The total amount of prizes offered is £3236—£2505 by the council of the society, £701 by the local committee, and £30 by Lord Londesborough."

We are, however, now enabled to append the Award of Prizes in accordance with our annual custom. The show of stock has never been surpassed, either in quantity or quality as a whole. The short-horn classes were superb, notwithstanding, we missed the name of Col. Towneley from the list of exhibitors, and there was also a very superior show of both Herefords and Devons. The horses, if we except the thorough-breds, were scarcely so good as we remember to have seen them. The sheep classes were excellent, particularly the Cotswolds and Leicesters, and, as we suppose, we must add the Shropshire Downs. The pigs were never so good, and it reflects credit on some of the Yorkshire owners that no longer doubtful cases of age were to be found among them.

Upwards of 146,000 persons visited the show yard, paying for admission nearly £10,000. On the Thursday, the first of the shilling days, 74,000 persons were admitted, consisting of artizans from the various factories in the town and neighbourhood of Leeds, as well those more directly interested in agricultural progress as dwellers in the rural districts.

AWARD OF PRIZES.

SHORT-HORNED CATTLE.

Class I.—*To the owner of the best Bull, calved on or before the 1st of July, 1859, and not exceeding six years' old.*

First prize of £30 to No. 6, Lord Feversham, of Duncombe Park, Helmsley, Yorkshire.

Second prize of £15 to No. 16, James Haughton Langston, M.P., of Sarsden House, Chipping-Norton, Oxfordshire.

Third prize of £5 to No. 11, James Dickinson, of Balcony Farm House, Upholland, Wigan, Lancashire.

Highly Commended.—No. 10, James Banks Stanhope, M.P., of Revesby Abbey, Boston, Lincolnshire. No. 13, Jonas Webb, of Babranam, near Cambridge. No. 17, James Haughton Langston, M.P., of Sarsden House, Chipping-Norton, Oxfordshire. No. 23, William Hall, of Butterwick, Ganton, Yorkshire.

Commended.—No. 1, Sir C. R. Tempest, Bart., of Broughton Hall, Skipton, Yorkshire. No. 2, Lord Kinnaird, K.T., of Rossie Priory, Inchture, Perthshire. No. 4, Jonathan Peel, of Knowlmere Manor, Clitheroe, Yorkshire. No. 18, John Lynn, of Church Farm, Stroxton, Grantham, Lincolnshire. No. 28, Henry Ambler, of Watkinson Hall, Halifax, Yorkshire. No. 33, Edward Holland, of Dumbleton Hall, Evesham, Worcestershire.

Class II.—*To the owner of the best Bull, calved since the 1st of July, 1859, and more than one year old.*

First prize of £25 to No. 54, John Taylor, of Moreton Hall, Whalley, Lancashire.

Second prize of £15 to No. 56, Jonas Webb, of Babraham, Cambridgeshire.

Third prize of £5 to No. 42, Sir Walter Calverley Trevelyan, Bart., of Wallington, Newcastle-upon-Tyne, Northumberland.

Highly Commended.—No. 39, Sir Charles R. Tempest, Bart., of Broughton Hall, Skipton, Yorkshire. No. 41, William Wright, of Sigglesthorne Hall, near Hull. No. 48, Jonathan Peel, of Knowlmere Manor, Clitheroe, Yorkshire. No. 50, Thos. Barnes, of Westland Moynalty, Co. Meath, Ireland. No. 60, Francis Hawksworth Fawkes, of Farnley Hall, Otley, Yorkshire. No. 71, the Duke of Montrose, of Buchanan, Glasgow.

Class III.—*To the owner of the best Bull-calf, above six and not exceeding twelve months old.*

First prize of £10 to No. 104, Charles Howard, of Biddenham, Bedford.

Second prize of £5 to No. 108, Henry Ambler, of Watkinson Hall, Halifax, Yorkshire.

Highly Commended.—No. 80, William Carr, of Stackhouse, Settle, Yorkshire. No. 102, Edward Bowly, of Siddington House, Cirencester, Gloucestershire.

Commended.—No. 86, Jonathan Peel, of Knowlmere Manor, Clitheroe, Yorkshire. No. 88, Sir Anthony de Rothschild, Bart., of Aston Clinton, Tring, Bucks. No. 91, Lord Feversham, of Duncombe Park, Helmsley, Yorkshire.

Class IV.—*To the owner of the best Cow, in milk or in calf, above three years old.*

First prize of £20 to No. 116, Captain Gunter, of The Grange, Wetherby, Yorkshire.

Second prize of £10 to No. 123, Richard Booth, of Warlaby, Northallerton, Yorkshire.

Third prize of £5 to No. 128, Lady Pigot, of Branches Park, Newmarket, Suffolk.

Highly Commended.—No. 117, Henry Ambler, of Watkinson Hall, Halifax, Yorkshire. No. 124, Richard Booth, of Warlaby, Northallerton, Yorkshire.

Commended.—No. 118, Henry Ambler, of Watkinson Hall, Halifax, Yorkshire. No. 126, The Hon. Col. Pennant, M.P., Penrhyn Castle, Bangor, Carnarvon. No. 127, Lady Pigot, of Branches Park, Newmarket, Suffolk.

CLASS V.—*To the owner of the best Heifer, in milk or in calf, and not exceeding three years old.*

First prize of £15 to No. 132, Captain Gunter, of the Grange, Wetherby, Yorkshire.

Second prize of £10 to No. 137, Richard Booth, of Warlaby, Northallerton, Yorkshire.

Third prize of £5 to No. 139, Joseph Robinson, of Clifton Pastures, Newport Pagnell, Bucks.

Highly Commended.—No. 133, Captain Gunter, of The Grange, Wetherby, Yorkshire.

Commended.—No. 131, Sir Charles R. Tempest, Bart., of Broughton Hall, Skipton, Yorkshire. No. 136, Hon. and Rev. Thomas Henry Noel Hill, of Berrington, Shrewsbury, Salop. No. 138, Jeffrey Bulmer, of Darlington and Aislaby Grange Farm, Darlington, Durham. No. 140, Richard Stratton, of Stapleton, Bristol. No. 141, Richard Stratton, of Stapleton, Bristol.

CLASS VI.—*To the owner of the best Yearling Heifer.*

First prize of £15 to No. 165, Captain Gunter, of the Grange, Wetherby, Yorkshire.

Second prize of £10 to No. 161, the Hon. George Edwin Lascelles, of Moor Hill, Harewood, Leeds.

Third prize of £5 to No. 153, Jonathan Peel, of Knowlmere Manor, Clitheroe, Yorkshire.

Highly Commended.—No. 152, Jonathan Peel, of Knowlmere Manor, Clitheroe, Yorkshire.

Commended.—No. 150, Stewart Marjoribanks, of Bushey Grove, Watford, Herts. No. 166, Captain Gunter, of the Grange, Wetherby, Yorkshire. No. 168, Francis Wythes, of Ravensden House, Bedford. No. 169, Edward Holland, of Dumbleton Hall, Evesham, Worcestershire. No. 171, Lady Pigot, of Branches Park, Newmarket, Suffolk. No. 172, Edmund Ruck, of Castle Hill, Cricklade, Wilts.

CLASS VII.—*To the owner of the best Heifer Calf, above six and under twelve months old.*

First prize of £10 to No. 182, Stewart Marjoribanks, of Bushey Grove, Watford, Herts.

Second prize of £5 to No. 188, Thomas Atherton, of Chapel House, Speke, Garston, Liverpool.

Highly Commended.—No. 179, William Carr, of Stackhouse, Settle, Yorkshire. No. 184, Robert Tennant, of Scarcroft Lodge, Leeds. No. 186, the Hon. and Rev. Thomas Henry Noel Hill, of Berrington, Shrewsbury, Salop. No. 193, Joseph Robinson, of Clifton Pastures, Newport Pagnell, Bucks.

Commended.—No. 181, Stewart Marjoribanks, of Bushey Grove, Watford, Herts. No. 183, Jonathan Peel, of Knowlmere Manor, Clitheroe, Yorkshire. No. 190, Charles Howard, of Biddenham, Bedford.

HEREFORD CATTLE.

CLASS I.—*To the owner of the best Bull, calved on or before the 1st of July, 1859, and not exceeding six years old.*

First prize of £30 to No. 203, Thomas Rea, of Westonbury, Pembridge, Hereford.

Second Prize of £15 to No. 204, Thomas Rea, of Westonbury, Pembridge, Hereford.

Third prize of £5 to No. 202, George Bray, of Haven Dilwyn, Leominster, Hereford.

Highly Commended.—No. 201, William Perry, of St. Oswald, Cholstrey, Leominster, Hereford.

Commended.—No. 205, William Cooke Morris, of Whitwick, Ledbury, Hereford.

CLASS II.—*To the owner of the best Bull, calved since the 1st of July, 1859, and more than one year old.*

First prize of £25 to No. 209, Richard Hill, of Golding Hall, Shrewsbury, Salop.

Second prize of £15 to No. 210, Edmund Wright, of Halston Hall, Oswestry, Shropshire.

Third prize of £5 to No. 207, William Perry, of St. Oswald, Cholstrey, Leominster, Hereford.

Commended.—No. 211, John Naylor, of Leighton Hall, Welshpool, Montgomery.

CLASS III.—*To the owner of the best Bull Calf, above six and not exceeding twelve months old.*

First prize of £10 to No. 215, Richard Hill, of Golding Hall, Shrewsbury, Salop.

Second prize of £5 to No. 212, John Williams, of St. Mary's, Kingsland, Leominster, Hereford.

Commended.—No. 213, His Royal Highness the Prince Consort.

CLASS IV.—*To the owner of the best Cow, in milk or in Calf, above three years old.*

First prize of £20 to No. 222, John Naylor, of Leighton Hall, Welshpool, Montgomery.

Second prize of £10 to No. 218, Philip Turner, of Leen, Pembridge, Leominster, Hereford.

Third prize of £5 to No. 217, Robert Leyshon, of Island Farm, Bridgend, Glamorgan.

Highly Commended.—No. 224, Executors of the late Lord Berwick, of Cronkhill, Shrewsbury, Salop.

Commended.—No. 221, John Williams, of St. Mary's, Kingsland, Leominster, Hereford. No. 223, Executors of the late Lord Berwick, of Cronkhill, Shrewsbury, Salop.

CLASS V.—*To the owner of the best Heifer, in milk or in calf, not exceeding three years old.*

First prize of £15 to No. 226, Philip Turner, of Leen, Pembridge, Leominster, Hereford.

Second prize of £10 to No. 228, John Naylor, of Leighton Hall, Welshpool, Montgomery.

Third prize of £5 to No. 225, Robert Leyshon, of Island Farm, Bridgend, Glamorgan.

CLASS VI.—*To the owner of the best Yearling Heifer.*

First prize of £15 to No. 230, William Perry, of St. Oswald, Cholstrey, Leominster, Hereford.

Second prize of £10 to No. 233, John Naylor, of Leighton Hall, Welshpool, Montgomery.

Third prize of £5 to No. 234, James Marsh Read, of Elkstone, Cirencester, Gloucester.

Commended.—No. 231, His Royal Highness the Prince Consort.

CLASS VII.—*To the owner of the best Heifer Calf, above six and under twelve months old.*

First prize of £10 to No. 238, Executors of the late Lord Berwick, of Cronkhill, Shrewsbury, Salop.

Second prize of £5 to No. 236, John Williams, of St. Mary's, Kingsland, Leominster, Hereford.

Commended.—No. 235, Philip Turner, of Leen, Pembridge, Leominster, Hereford.

DEVON CATTLE.

CLASS I.—*To the owner of the best Bull calved on or before the 1st of July, 1859, and not exceeding six years old.*

First prize of £30 to No. 241, John Bodley, of Stockley Pomeroy, Crediton, Devon.

Second prize of £15 to No. 240, George Turner, of Barton, Exeter, Devon.

Third prize of £5 to No. 247, His Royal Highness the Prince Consort, of Windsor Castle.

Commended.—No. 245, John Courtenay Halse, of Pulworthy Farm, Molland, South Molton, Devonshire.

CLASS II.—*To the owner of the best Bull calved since the 1st of July, 1859, and more than one year old.*

First prize of £25 to No. 249, Walter Farthing, of Stowey Court, Bridgwater, Somerset.

Second prize of £15 to No. 250, James Merson, of Brinsworthy, North Molton, Devon.

Third prize of £5 to No. 248, George Turner, of Barton, Exeter, Devon.

Commended.—No. 251, J. Courtenay Halse, of Pulworthy, Molland, South Molton, Derbyshire.

CLASS III.—*To the owner of the best Bull Calf, above six and not exceeding twelve months old.*

First prize of £10 to No. 258, Walter Farthing, of Stowey Court, Bridgwater, Somerset.

Second prize of £5 to No. 257, His Royal Highness the Prince Consort.

Highly Commended.—No. 255, William Hole, of Hannaford, Barnstaple, Devon.

Class generally Commended.

CLASS IV.—*To the owner of the best Cow, in milk or in calf, above three years old.*

First prize of £20 to No. 261, His Royal Highness the Prince Consort.

Second prize of £10 to No. 260, George Turner, of Barton, Exeter, Devon.

Third prize of £5, no competition.

CLASS V.—*To the owner of the best Heifer, in milk or in calf, not exceeding three years old.*

First prize of £15 to No. 263, Edward Pope, of Great Toller, Maiden Newton, Dorset.

Second prize of £10 to No. 265, James Hole, of Knowle House, Dunster, Somerset.

Third prize of £5 to No. 264, Edward Pope, of Great Toller, Maiden Newton, Dorset.

CLASS VI.—*To the owner of the best Yearling Heifer.*

First prize of £15 to No. 269, Walter Farthing, of Stowey Court, Bridgwater, Somerset.

Second prize of £10 to No. 272, James Merson, of Brinsworthy, North Molton, Devon.

Third prize of £5 to No. 273, James Merson, of Brinsworthy, North Molton, Devon.

Highly Commended.—No. 266, George Turner, of Barton, Exeter, Devon. No. 271, James Hole, of Knowle House, Dunster, Somerset.

Class generally Commended.

CLASS VII.—*To the owner of the best Heifer Calf, above six and under twelve months old.*

First prize of £10 to No. 278, James Davey, of Flitton Barton, South Molton, Devon.

Second prize of £5 to No. 277, George Turner, of Barton, Exeter, Devon.

Commended.—No. 276, William Hole, of Hannaford, Barnstaple, Devon.

SUSSEX CATTLE.

CLASS I.—*To the owner of the best Bull, calved on or before the 1st of July, 1859, and not exceeding six years old.*

No entry.

CLASS II.—*To the owner of the best Bull, calved since the 1st of July, 1859, and more than one year old.*

The prize of £10 to No. 279, John and Alfred Heasman, of Angmering, Arundel, Sussex.

CLASS III.—*To the owner of the best Cow, in milk or in calf, above three years old.*

No entry.

CLASS IV.—*To the owner of the best Heifer, in milk or in calf, not exceeding three years old.*

The prize of £10 to No. 280, John and Alfred Heasman, of Angmering, Arundel, Sussex.

CLASS V.—*To the owner of the best Yearling Heifer.*

No entry.

OTHER ESTABLISHED BREEDS.

Not including the Short-horn, Hereford, Devon, or Sussex breed.

CLASS I.—*To the owner of the best Bull, calved on or before the 1st of July, 1859, and not exceeding six years old.*

The prize of £10 to No. 281, Alexander Bowie, of Mains of Kelly, Arbroarth, Forfarshire.

Commended.—No. 282, Samuel Camfield Baker, of Beaufort Street, King's Road, Chelsea, Middlesex.

CLASS II.—*To the owner of the best Bull, calved since the 1st of July, 1859, and more than one year old.*

No entry.

CLASS III.—*To the owner of the best Cow, in milk or in calf, above three years old.*

No entry.

CLASS IV.—*To the owner of the best Heifer, in milk or in calf, not exceeding three years old.*

The prize of £10 to No. 290, Lord Sondes, of Elmham Hall, Thetford, Norfolk.

Commended.—No. 287, Samuel Camfield Baker, of Beaufort Street, King's Road, Chelsea, Middlesex. No. 288, Samuel Camfield Baker, of Beaufort Street, King's Boad, Chelsea, Middlesex. No. 289, Samuel Camfield Baker, of Beaufort Street, King's Road, Chelsea, Middlesex. No. 291, Lord Sondes, of Elmham Hall, Thetford, Norfolk.

CLASS V.—*To the owner of the best Yearling Heifer.*

The prize of £5 to No. 293, Lord Sondes, of Elmham Hall, Thetford, Norfolk.

PRIZES GIVEN BY THE LEEDS LOCAL COMMITTEE.

DAIRY COWS.

To the owner of the best Cow, for dairy purposes, in calf or in milk.

First prize of £10 to No. 299, John R. Middlebrough, of South Milford, near Milford Junction, Yorkshire.

Second prize of £5 to No. 297, Henry Ambler, of Watkinson Hall, Halifax, Yorkshire.

HORSES.

For the Thorough-bred Stud Horse, having served Mares during the season, 1861, *which, in the opinion of the Judges, is best calculated to improve and perpetuate the breed of the sound and stout thorough-bred horse for general stud purposes.*

First prize of £100 to No. 300, John Wyatt, of Nutbourne, Emsworth, Hants.

Second prize of £25 to No. 301, Tom Hussey, of Stud Farm, Skirmett, Henley-on-Thames, Oxfordshire.

Highly Commended.—No. 303, Thomas Groves, of Park House, Spofforth, Wetherby, Yorkshire. No. 306, John Johnstone, of Broadholm, Lockerby, Dumfriesshire.

Commended.—No. 313, Thomas Humphrey Pedley, of Stubbing Court, Chesterfield, Derbyshire.

CLEVELANDS.

CLASS I.—*To the owner of the best Stallion of any age.*

The prize of £20 to No. 325, Henry Rickatson, of the Angel Hotel, Wetherby, Yorkshire.

CLASS II.—*To the owner of the best Mare, three years old and upwards.*

The prize of £10 to No. 327, John Smith, of Long Newton, Darlington.

Highly Commended.—No. 329, George Holmes, of Toll Gavel, Beverley, Yorkshire.

CLASS III.—*To the owner of the best Filly, two years old.*

No entry.

OTHER HORSES.

CLASS I.—*To the owner of the best Stallion suitable for getting hunters.*

First prize of £25 to No. 336, J. Webster, of Allerston, Pickering, York.

Second prize of £15 to No. 332, James and Charles Moffat, of Kirklington Park, Kirklington, Cumberland.

Third prize of £5 to No. 335, Thomas Groves, of Park House, Spofforth, Wetherby, York.

CLASS II.—*To the owner of the best Brood Mare, with foal at foot, or in foal, for breeding hunters.*

First prize of £15 to No. 348, William Bousfield, of Gardener's Arms, Pilling, Fleetwood-on-Wire, Lancashire.

Second prize of £10 to No. 350, Alfred Hawxwell, of Prospect House, Thirsk, Yorkshire.

CLASS III.—*To the owner of the best Brood Mare, with foal at foot, or in foal, for breeding hackneys.*

First prize of £15 to No. 358, Job Aspinall, of Mount Tabor, Halifax, Yorkshire.

Second prize of £10 to No. 355, Richard Cook, of Huggate, Pocklington, Yorkshire.

Third prize of £5 to No. 359, William Bradley Wainman, of Carhead, Cross Hills, Yorkshire.

LOCAL PRIZES

Given by the Leeds Local Committee.

LIGHT HORSES.

CLASS I.—*To the owner of the best Blood Hunter, Mare or Gelding, five years old (two crosses).*

First prize of £20 to No. 360, Walter Holdforth, of Burley, Leeds.

Second prize of £10 to No. 366, George Holmes, of Toll Gavel, Beverley, Yorkshire.

Highly Commended.—No. 364, John Batty, of Bishop Monkton, Ripon.

Commended.—No. 363, Sir George Strickland, Bart., of Boynton, Bridlington, Yorkshire.

Class generally Commended.

CLASS II.—*To the owner of the best Blood Hunter, Mare or Gelding, four years old (two crosses).*

First prize of £15 to No. 371, Joseph Whitwell Pease, of Woodlands, Darlington, Durham.

Second prize of £5 to No. 378, Richard Botterill, Garton, Driffield, Yorkshire.

Highly commended.—No. 380, Simeon Musgrave, of Market Weighton, Yorkshire.

CLASS III.—*To the owner of the best Hunting Mare or Gelding, three years old.*

The prize of £5 to No. 381, Thomas C. and John B. Booth, of Killerby, Catterick, Yorkshire.

CLASS IV.—*To the owner of the best Coaching Stallion.*

First prize of £10 to No. 385, James Harker, of South Cliff, Hotham, Brough, Yorkshire.

CLASS V.—*To the owner of the best Coaching Mare, three years old.*

The prize of £5, no entry.

CLASS VI.—*To the owner of the best Coaching Brood Mare, with a foal, or stinted.*

The prize of £5, to No. 389, Captain Gunter, of the Grange, Wetherby, Yorkshire.

CLASS VII.—*To the owner of the best Roadster Stallion.*

First prize of £10 to No. 393, William Jackson, of St. Peter's, Wiggen Hall, near Lynn, Norfolk.

Second prize of £5 to No. 396, William Johnson, of Billinghay, Sleaford, Lincolnshire.

CLASS VIII.—*To the owner of the best Roadster Mare or Gelding, any age, under* 15½ *hands.*

The prize of £10 to No. 405, John Wilson, of Roundhay, near Leeds.

NOTE.—For Classes IX, X, XI, and XII, Dray and Agricultural Horses, see page 474.

CLASS XIII.—*To the owner of the best Gelding Pony, under* 14 *hands.*

The prize of £5 to No. 421, F. Cook Matthews, of Great Driffield, Yorkshire.

Highly Commended.—No. 428, William Ingham, of Limestead Gannery, Armley, Leeds. No. 430, George Holmes, of Toll Gavell, Beverley, Yorkshire.

Commended.—No. 431, Robert Johnson, of Bridge Street, Gainsborough, Lincolnshire.

CLASS XIV.—*To the owner of the best Mare Pony, under* 14 *hands.*

The prize of £5 to No. 433, J. Abbey, of Crimple, Knaresborough, Yorkshire.

CLASS XV.—*To the owner of the best Mare or Gelding Pony, under* 12 *hands.*

The prize of £5 to No. 438, James Witham, of Gledhow, Leeds, Yorkshire.

Commended.—No. 435, John George Taylor, of Shipley, Yorkshire. No. 436, John George Taylor, of Shipley, Yorkshire.

PRIZES GIVEN BY LORD LONDESBOROUGH.

To the owner of the best Hunting Colt, three years old.

The prize of £20 to No. 444, Simeon Musgrave, of Market Weighton, East Riding of Yorkshire.

Highly Commended.—No. 445, Richard Thomas, of The Crwys Farm, Cardiff, Glamorganshire.

AGRICULTURAL HORSES GENERALLY.

CLASS I.—*To the owner of the best Stallion for Agricultural purposes, foaled on or before the* 1*st of January*, 1859.

First prize of £25 to No. 458, Jonas Webb, of Brabraham, Cambridge.

Second prize of £15 to No. 469, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Third prize of £5 to No. 475, Benjamin Taylor, of Peterborough, Northampton.

Highly Commended.—No. 467, Matthew Reed, of Beamish Burn, Chester-le-Street, Durham.

Commended.—No. 456, Herman Biddell, of Playford, Ipswich, Suffolk. No. 479, John Snowdon, of Stonesby, Waltham, Leicester.

CLASS II.—*To the owner of the best Stallion for Agricultural purposes, foaled in the year* 1859.

First prize of £20 to No. 498, Edwin Butler, of Balderton, Newark, Notts.

Second prize of £10 to No. 493, Thomas Mills, of Harmston, Lincoln.

Third prize of £5 to No. 492, Edward Holland, M.P., of Dumbleton Hall, Evesham, Worcestershire.

Highly Commended.—No. 491, William Wilson, of Baylham Hall, Ipswich, Suffolk.

Commended.—No. 488, Richard Belcher, of Stanford, Farringdon. No. 499, John Hemmant, of Thorney, Cambridgeshire.

Class III.—*To the owner of the best Mare and Foal for Agricultural purposes.*

First prize of £20 to No. 509, Edward Sumpter, of Billinghay Dales, Billinghay, Lincoln.

Second prize of £10 to No. 506, William Proude, of Kirk Hammerton, Green Hammerton, York.

Third prize of £5 to No. 502, His Royal Highness the Prince Consort.

Highly Commended.—No. 507, John Gay Attwater, of Hallingwood Farm, Cubberley, Cheltenham, Gloucestershire.

Commended.—No. 508, Evan Chas. Sutherland-Walker, of Crow Nest, near Halifax, Yorkshire.

Class IV.—*To the owner of the best two-year old Filly for Agricultural purposes.*

First prize of £15 to No. 514, His Royal Highness the Prince Consort.

Second prize of £10 to No. 519, John Ward, of East Mersea, Colchester, Essex.

Third prize of £5 to No. 517, The Hon. Colonel Pennant, M.P., of Penrhyn Castle, Bangor, Carnarvon.

Highly Commended.—No. 511, Samuel Wolton, of Newbourn Hall, Woodbridge, Suffolk.

Commended.—No. 513, John Clayden, of Littlebury, Saffron-Walden, Essex.

DRAY HORSES.

Class I.—*To the owner of the best Stallion, foaled on or before the 1st of January,* 1859.

First prize of £25 to No. 529, Robert Gibson, of Newcastle-upon-Tyne.

Second prize of £10 to No. 523, W. King, of Witleigh Inn, Tiverton, Devon.

Third prize of £5 to No. 522, James Ashcroft, of Cow Lane, Wavertree, near Liverpool.

Commended.—No. 526, John Manning, of Orlingbury, near Wellingborough, Northampton.

Class II.—*To the owner of the best Stallion, foaled in the year* 1859.

Not sufficient merit.

Class III.—*To the owner of the best Mare, with her foal at her feet.*

First prize of £20 to No. 535, T. Fullard, of Thorney, near Peterborough.

Second prize of £10 to No. 536, Joseph Roberts, of Marlborough, Egremont, Cumberland.

Third prize of £5, no competition.

Class IV.—*To the owner of the best Filly, foaled in the year* 1859.

First prize of £15 to No. 538, John Kay Farnworth, of Alderley Edge, Chorley, Cheshire.

Second prize of £10 to No. 537, John Gay Attwater, of Hallingwood Farm, Cubberley, Cheltenham.

Third prize of £5, no competition.

PRIZES GIVEN BY THE LEEDS LOCAL COMMITTEE.

CLASS IX.—*To the owner of the best Pair of Dray Horses, Mares or Geldings, or Mare and Gelding.*

The prize of £10 to No. 539, William Carver, of Manchester.

CLASS X.—*To the owner of the best Pair of Mares or Geldings, or Mare and Gelding, for Agricultural purposes.*

First prize of £10 to No. 543, William Moxon and Sons, of Pontefract, Yorkshire.

Second prize of £5 to No. 546, Joseph Norton, of Nortonthorpe Hall, Huddersfield.

Highly Commended.—No. 548, J. T. Pearson, of Parkside, Headingley, Leeds.

Commended.—No. 544, Joseph Norton, of Nortonthorpe Hall, Huddersfield, Yorkshire. No. 545, Duke of Newcastle, of Clumber Park, Worksop, Notts.

The Class generally Commended.

CLASS XI.—*To the owner of the best Gelding, three years old, for Agricultural purposes.*

The prize of £5 to No. 549, W. Bramley, of Amcoates, Bawtry, Lincolnshire.

CLASS XII.—*To the owner of the best Mare, three years old, for Agricultural purposes.*

The prize of £5 to No. 550, Robert Garside, of 3, Elmwood Place, Leeds.

SHEEP.

LEICESTERS.

CLASS I.—*To the owner of the best Shearling Ram.*

First prize of £20 to No. 557, Lieut.-Col. Inge, Thorpe Constantine, Tamworth, Staffordshire.

Second prize of £10 to No. 575, William Sanday, of Holme Pierrepont, Notts.

Third prize of £5 to No. 576, William Sanday, of Holme Pierrepont, Notts.

Highly Commended.—No. 558, Lieut.-Col. Inge, of Thorpe Constantine, Tamworth, Staffordshire.

Commended.—No. 570, Thomas Edward Pawlett, of Beeston, Sandy, Bedfordshire.

CLASS II.—*To the owner of the best Ram of any other age.*

First prize of £20 to No. 600, William Sanday, of Holme Pierrepont, Notts.

Second prize of £10 to No. 603, William Sanday, of Holme Pierrepont, Notts.

Third prize of £5 to No. 599, William Sanday, of Holme Pierrepont, Notts.

Highly Commended.—No. 596, John Borton, of Barton House, Malton, Yorkshire.

Commended.—No. 595, John Borton, of Barton House, Malton, Yorkshire. No. 597, John Borton, of Barton House, Malton, Yorkshire.

Class generally Commended.

CLASS III.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize of £20 to No. 617, William Sanday, of Holme Pierrepont, Notts.

Second prize of £10 to No. 612, Lieutenant-Colonel Inge, of Thorpe Constantine, Tamworth, Staffordshire.

Third prize of £5 to No. 611, George Turner, of Barton, Exeter, Devon.

SOUTH-DOWNS.

CLASS I.—*To the owner of the best Shearling Ram.*

First prize of £20 to No. 621, William Rigden, of Hove, Brighton, Sussex.

Second prize of £10 to No. 620, William Rigden, of Hove, Brighton, Sussex.

Third prize of £5 to No. 625, John and Alfred Heasman, of Angmering, Arundel, Sussex.

CLASS II.—*To the owner of the best Ram of any other age.*

First prize of £20 to No. 646, William Rigden, of Hove, Brighton, Sussex.

Second prize of £10 to No. 645, William Rigden, of Hove, Brighton, Sussex.

Third prize £5 to No. 654, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Highly Commended.—No. 656, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Commended.—No. 653, Lord Walsingham, of Merton Hall, Thetford Norfolk. No. 655, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

CLASS III.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize of £20 to No. 660, the Duke of Richmond, of Goodwood, Chichester, Sussex.

Second prize of £10 to No. 664, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Third prize of £5 to No. 663, Earl of Radnor, of Coleshill House, Highworth, Wilts.

Highly Commended.—No. 659, John and Alfred Heasman, of Angmering, Arundel, Sussex.

Commended.—No. 658, John and Alfred Heasman, of Angmering, Arundel, Sussex.

SHROPSHIRES.

CLASS I.—*To the owner of the best Shearling Ram.*

First prize of £15 to No. 691, Thomas Horton, of Harnage Grange, Shrewsbury, Salop.

Second prize of £10 to No. 681, James and Edward Crane, of Shrawardine, Shrewsbury, Salop.

Third prize of £5 to No. 713, Anne Baker, of Grendon, Atherstone, Warwickshire.

Highly Commended.—No. 714, Anne Baker, of Grendon, Atherstone, Warwickshire.

Commended.—No 683, James and Edward Crane, of Shrawardine, Shrewsbury, Salop. No. 688, Thomas Horton, of Harnage Grange, Shrewsbury, Salop. No. 693, Thomas Mansell, of Adcott, Shrewsbury, Salop.

CLASS II.—*To the owner of the best Ram of any other age.*

First prize of £15 to No. 742, Edward Holland, of Dumbleton Hall, Evesham, Worcester.

Second prize of £10 to No. 728, Thomas Horton, of Harnage Grange, Shrewsbury, Salop.

Third prize of £5 to No. 738, Thomas Horley, jun., of the Fosse, Leamington, Warkwickshire.

Highly Commended.—No. 735, William Orme Forster, of Kinver Hill Farm, Stourbridge, Worcester.

Commended.—No. 731, Thomas Horton, of Harnage Grange, Shrewsbury, Salop. No. 736, William Orme Forster, of Kinver Hill Farm, Stourbridge, Worcestershire.

CLASS III.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize of £15 to No. 757, W. O. Foster, of Kinver Hill Farm, Stourbridge, Worcestershire.

Second prize of £10 to No. 747, James and Edward Crane, of Shrawardine, Shrewsbury, Salop.

Third prize of £5 to No. 752, John Evans, of Uffington, Shrewsbury, Salop.

Highly Commended.—No. 748, James and Edward Crane, of Shrawardine, Shrewsbury, Salop.

Commended.—No. 749, James and Edward Crane, of Shrawardine, Shrewsbury, Salop. No. 761, the Earl of Dartmouth, of Patshull, Albrighton, Wolverhampton, Stafford. No. 750, John Coxon, of Freeford, Lichfield, Stafford.

LONG-WOOLLED SHEEP.

Not qualified to compete as Leicesters.

CLASS I.—*To the owner of the best Shearling Ram.*

First prize of £20 to No. 789, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

Second prize of £10 to No. 783, William Lane, of Broadfield Farm, Northleach, Gloucestershire.

Third prize of £5 to No. 780, James Walker, of Northleach, Gloucestershire.

Highly Commended.—No. 772, Edward Handy, of Sierford, Cheltenham, Gloucestershire.

Commended.—No. 785, William Lane, of Broadfield Farm, Northleach, Gloucestershire. No. 790, Robert Garne, of Aldsworth, Northleach, Gloucestershire. No. 793, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

CLASS II.—*To the owner of the best Ram of any other age.*

First prize of £20 to No. 807, William Lane, of Broadfield Farm, Northleach, Gloucestershire.

Second prize of £10 to No. 808, John King Tombs, of Langford, Lechlade, Gloucestershire.

Third prize of £5 to No. 810, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

Highly Commended.—No, 805, William Lane, of Broadfield Farm, Northleach, Gloucestershire.

Commended.—No. 799, Edward Handy, of Sierford, Cheltenham, Gloucestershire. No. 811, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

CLASS III.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize of £20 to No. 816, George Fletcher, of Shipton Sollars, Cheltenham, Gloucestershire.

Second prize of £10 to No. 820, William Lane, of Broadfield Farm, Northleach, Gloucestershire.

Third prize of £5 to No. 819, William Lane, of Broadfield Farm, Northleach, Gloucestershire.

Highly Commended.—No. 817, George Fletcher, of Shipton Sollars, Cheltenham, Gloucestershire.

Commended.—No. 818, Wm. Lane, of Broadfield Farm, Northleach, Gloucestershire.

SHORT-WOOLLED SHEEP.

Not qualified to compete as South-Downs or Shropshire Sheep.

CLASS I.—*To the owner of the best Shearling Ram.*

First prize of £20 to No. 847, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berks.

Second prize of £10 to No. 829, Stephen King, of Old Hayward Farm, Hungerford, Berks.

Third prize of £5 to No. 849, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berks.

Highly Commended.—No. 822, John Bryan, of Southleigh, Witney, Oxfordshire. No. 823, John Bryan, of Southleigh, Witney, Oxfordshire.

Commended.—No. 826, John Bryan, of Southleigh, Witney, Oxfordshire. No. 854, John Bryan, of Southleigh, Witney, Oxfordshire. No. 864, John Bryan, of Southleigh, Witney, Oxfordshire.

CLASS II.—*To the owner of the best Ram of any other age.*

First prize of £20 to No. 882, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berkshire.

Second prize of £10 to No. 871, Stephen King, of Old Hayward Farm, Hungerford, Berks.

Third prize of £5 to No. 877, William Browne Canning, of Chisledon, Swindon, Wiltshire.

Highly Commended.—No. 867, John Bryan, of Southleigh, Witney, Oxfordshire. No. 875, Geo. Henry Barnett, of Glympton Park, Woodstock, Oxfordshire. No. 876, William Browne Canning, of Chisledon, Swindon, Wiltshire. No. 881, William Humfrey, of Oak Ash, Cheddleworth, Wantage, Berkshire.

Commended.—No. 885, Joseph Druce, of Ensham, Oxfordshire. No. 888, John Bryan, of Southleigh, Witney, Oxfordshire.

CLASS III.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize of £20 to No. 894, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berkshire.

Second prize of £10 to No. 892, Stephen King, of Old Hayward Farm, Hungerford, Berks.

Third prize of £5 to No. 889, John Washbourne Brown, of Uffcott, Swindon, Wilts.

Highly Commended.—No. 893, William Browne Canning, of Chisledon, Swindon, Wiltshire. (Four Ewes only.)

PRIZES GIVEN BY THE LEEDS LOCAL COMMITTEE.

LONG-WOOLLED SHEEP.

Neither Leicesters nor Cotswolds.

CLASS I.—*To the owner of the best Shearling Ram.*

The prize of £10 to No. 899, John Lynn, of Church Farm, Stroxton, Grantham, Lincolnshire.

CLASS II.—*To the owner of the best Ram of any age.*

The prize of £10 to No. 901, J. Simpson, of Spofforth Park, Wetherby, Yorkshire.

CLASS III.—*To the owner of the best Pen of Five Ewes, of the same flock.*

Prize of £10—no entry.

MOUNTAIN SHEEP.

CLASS I.—*To the owner of the best Shearling Cheviot Ram.*

The prize of £5—no entry.

CLASS II.—*To the owner of the best Pen of Five Cheviot Ewes, of the same flock.*

The prize of £5 to No. 902, the Hon. Col. Pennant, M.P., of Penrhyn Castle, Bangor, Carnarvonshire.

CLASS III.—*To the owner of the best Black-faced Ram, of any age.*

The prize of £5 to No. 904, Nicholas Barker, of Bransdale, Kirby Moorside, N. R. Yorkshire.

CLASS IV.—*To the owner of the best Pen of Five Black-faced Ewes, of the same flock.*

The prize of £6 to No. 906, Samuel Newall, of Eastby, Skipton, Yorkshire.

CLASS V.—*To the owner of the best Lonk Ram with dark or mottled faces.*

The prize of £5 to 907, Jonathan Peel, of Knowlmere Manor, Clitheroe, Yorkshire.

CLASS VI.—*To the owner of the best Pen of Five Lonk Ewes, with dark or mottled faces, of the same flock.*

The prize of £5 to No. 908, Jonathan Peel, of Knowlmere Manor, Clitheroe, Yorkshire.

Highly Commended.—No. 909, David Lambert, of Silsden, Keighley, Yorkshire.

PRIZES GIVEN BY LORD LONDESBOROUGH.

To the owner of the best Pen of Five Leicester Ewes, of the same flock, not being Shearlings.

The prize of £10 to No. 911, William Lovell, of Nafferton Grange, Driffield, Yorkshire.

Highly Commended.—No. 910, G. Walmsley, of Rudston, Bridlington, Yorkshire.

PIGS.

Class I.—*To the owner of the best Boar of a large breed, of any colour.*

First prize of £10 to No. 919, John Bullock, of Brick-lane, Bradford, Yorkshire.
Second prize of £5 to No. 921, Samuel Woodhouse, of Norley Hall, Frodsham, Cheshire.
Highly Commended.—No. 914, John Dyson, of the Adelphi Hotel, Dock Street, Leeds.

Class II.—*To the owner of the best Boar of a small white breed.*

First prize of £10 to No. 934, His Royal Highness the Prince Consort, Windsor Castle, Berkshire.
Second prize of £5 to No. 937, Lord Wenlock, of Escrick, Yorkshire.
Highly Commended.—No. 932, John Harrison, jun., of Heaton Norris, Stockport, Lancashire.

Class III.—*To the owner of the best Boar of a small black breed.*

First prize of £10 to No. 944, Thomas Crisp, of Butley Abbey, Wickham-Market, Suffolk.
Second prize of £5 to No. 943, G. M. Sexton, of Wherstead Hall, Ipswich, Suffolk.
Highly Commended.—No. 945, Thomas Crisp, of Butley Abbey, Wickham-Market, Suffolk.

Class IV.—*To the owner of the best Boar of a breed not eligible for the preceding classes.*

First prize of £10 to No. 947, George Brown, of No. 1, Burneston-place, Leeds, Yorkshire.
Second prize of £5 to No. 953, William B. Wainman, of Carhead, Cross Hills, Yorkshire.
Highly Commended.—No. 950, John Charlesworth, of Headfield, Dewsbury, Yorkshire.

Class V.—*To the owner of the best Breeding Sow of a large breed, of any colour.*

First prize of £10 to No. 954, W. B. Wainman, of Carhead, Cross Hills, Yorkshire.
Second prize of £5 to No. 963, W. J. Sadler, of Bentham and Calcott, Cricklade, Wiltshire.
Highly Commended.—No. 955, W. B. Wainman, of Carhead, Cross Hills, Yorkshire.

Class VI.—*To the owner of the best Breeding Sow of a small white breed.*

First prize of £10 to No. 974, W. B. Wainman, of Carhead, Cross Hills, Yorkshire.
Second prize of £5 to No. 994, Mitchell Walton, of 6, Foundry Street, Halifax, Yorkshire.

Highly Commended.—No. 986, Sir G. O. Wombwell, of Newburgh Park, Easingwold, Yorkshire.

Class generally Commended.

Class VII.—*To the owner of the best Breeding Sow of a small black breed.*

First prize of £10 to No. 1005, William Hatton, of Addingham, Leeds, Yorkshire.

Second prize of £5 to No. 1002, Thomas Crisp, of Butley Abbey, Wickham-Market, Suffolk.

Highly Commended.—No. 1004, Thomas Crisp, of Butley Abbey, Wickham-Market, Suffolk.

Class VIII.—*To the owner of the best Breeding Sow of a breed not eligible for the preceding classes.*

First prize of £10 to No. 1013, Joseph Norton, of Nortonthorpe Hall, Huddersfield, Yorkshire.

Second prize of £5 to No. 1006, William Bradley Wainman, of Carhead, Cross Hills, Yorkshire.

Highly Commended.—No. 1010, Michael Gavins, of Fox Inn, Woodhouse Carr, Leeds, Yorkshire.

Class IX.—*To the owner of the best Pen of Three Breeding Sow Pigs of a large breed, of any colour, of the same litter, above four and under eight months old.*

First prize of £10 to No. 1017, the Rev. Henry G. Baily, of Swindon, Wiltshire.

Second prize of £5 to No. 1016, Henry S. M'Clintock, of Randalstown, Antrim.

Class X.—*To the owner of the best Pen of Three Breeding Sow Pigs, of a small white breed, of the same litter, above four and under eight months old.*

First prize of £10 to No. 1020, Lord Wenlock, of Escrick, Yorkshire.

Second prize of £5 to No. 1021, Lord Wenlock, of Escrick, Yorkshire.

Highly Commended.—No. 1019, His Royal Highness the Prince Consort.

Class XI.—*To the owner of the best Pen of Three Breeding Sow Pigs, of the same litter, above four and under eight months old.*

First prize of £10 to No. 1024, Samuel Wolton, of Kesgrave, Woodbridge, Suffolk.

Second prize of £5—no competition.

Class XII.—*To the owner of the best Pen of Three Breeding Sow Pigs of a breed not eligible for the preceding classes, of the same litter, above four and under eight months old.*

First prize of £10 to 1027, Joseph Gledhill, of Heckmondwike, Leeds, Yorkshire.

Second prize of £5—withheld; not sufficient merit.

Extracts from British and Foreign Journals.

ON THE COLOUR-TESTS FOR STRYCHNIA, AND THE DIAGNOSIS OF THE ALKALOIDS.

Being the substance of part of the Croonian Lectures for 1861, *delivered at the Royal College of Physicians,*

By William A. Guy, M.B. Cantab., Fellow of the College and Professor of Forensic Medicine, King's College, London.

(*Continued from p.* 408.)

Having shown that strychnia when treated with sulphuric acid undergoes no change of colour, and that the several tests (the peroxide of lead, the peroxide of manganese, the bichromate of potash, the ferricyanide of potassium, and the permanganate of potash) undergo either no change of colour, or such changes only as do not admit of being confounded with the strychnia colours, I proceed to consider in succession, 1. The best way of applying the colour-tests; 2. The best order in which to use the reagents; and 3. The best form in which to apply the colour-developing test.

1. The colour-tests are best shown on slabs of glass coated with white arsenical enamel by the process technically called "flashing."* But the lids of porcelain crucibles, or white plates, or fragments of any white ware, will answer the purpose very well. If the enamelled glass is used, the tests should be applied to the glass-surface. In using the tests scrupulous cleanliness should be observed, and the sulphuric acid and colour-developing tests, if in solution, are best applied by the drop-bottle, as more delicate, and more secure from any soil, than the common glass-rod. For mixing the several substances together a glass spatula is to be preferred to a glass rod.

2. The order in which the sulphuric acid and the colour-developing tests should be applied is easily determined by one or two simple considerations. Good and characteristic results may be obtained by mixing the sulphuric acid with the colour-developing tests, and then adding a crystal of strychnia. When so mixed with small quantities of the peroxide of manganese and lead, the acid solution has a neutral tint, which

* I have been in the habit of using this enamelled glass for colour-tests for several years. Oblong slabs of the kind described in the text may be obtained at Powell's Glass Works, Whitefriars.

in no way interferes with the full development of the strychnia colours; and even the acid mixtures of the other colour-developing tests are not open to any fallacy if the alkaloid is brought into contact with them as soon as they are made, and before the colours first produced are deepened or changed by exposure to the air. But the method of procedure which begins with dissolving the alkaloid in the acid and then applying the colour-developing tests is to be preferred, inasmuch as the absence of colour in the acid solution is some advantage in itself, as giving full effect to the strychnia colours, while it has the still greater advantage of distinguishing strychnia from several alkaloids (poisonous and non-poisonous), which yield colours with the acid without the addition of the colour-developing substances.

3. The best form in which to apply the colour-tests for strychnia is a subject of considerable practical importance, and it is one upon which there is at present no distinct agreement among chemists. Some authorities prescribe the application of the colour-developing substances in the solid form, some in solution; and some who prefer the state of solution use strong solutions, while others employ weak ones. The balance of authority is certainly in favour of applying the colour-developing tests in the solid form, and my own experience is favorable to this mode of application. It is also commended by the obvious consideration that solution in water is favorable to a rapid development of the changing colours which constitute the test, such quick change of colour being among the most serious objections to the colour tests. At any rate it must be admitted to be of the first importance to secure as slow a change of colour as possible, in order to give time for the observation of the colours actually produced.

The superiority of the solid form to the solution is easily shown by a comparative experiment. If we take two minute fragments of bichromate of potash of equal size, place them on a slab of white enamelled glass or porcelain, add to one of the fragments a drop of distilled water, and dissolve it in the water, and leave the other untouched, then place on the slab two equal drops of the same solution of strychnia in sulphuric acid, we shall find that on bringing the fragment of bichromate of potash into contact with the acid solution of strychnia, its colour changes from yellow to blue, and, when stirred into the liquid with a glass rod or glass spatula, yields a rich blue solution, which retains this colour long enough for easy and complete identification, and then gradually assumes the other tints to be presently described, retaining the final tint for hours or days. While, on the other hand, the solution of

the bichromate of potash, when brought into contact with the acid solution of strychnia, yields a blue colour at the point of contact, which colour quickly disappears on mixing the two liquids with each other. When, therefore, we make use of the colour-developing tests in substance, we obtain highly characteristic and lasting colours; but when we use them in solution, one evanescent colour only. It is true that if to the mixture of the acid solution of strychnia with the watery solution of bichromate of potash we add a drop or two of strong sulphuric acid, we obtain a blue liquid, which undergoes the characteristic changes of colour; but the important fact remains that, other things being equal, solution in water greatly impairs the delicacy of the colour tests. If in this comparative experiment we substitute for the bichromate of potash the other soluble colour-developing substances —the ferricyanide of potassium and the permanganate of potash—we obtain the same results.

The injurious effect of dilution with water upon the colour tests is differently shown in the following comparative experiment:—I placed on a porcelain slab four equal drops of the same solution of strychnia in strong sulphuric acid. To two of the four drops I added a drop of distilled water, and then to all the drops, diluted and undiluted, equal minute fragments of the bichromate of potash. The undiluted drops gave highly characteristic results—the usual succession of rich strychnia-colours; while the diluted spots gave no indication of the presence of strychnia, but merely a yellow solution. The same comparative experiment gave the same results with the ferricyanide of potassium, the permanganate of potash, and the peroxides of manganese and lead. The ferricyanide gave a lemon-yellow, and the permanganate of potash a pink, solution; while the peroxides of manganese and lead imparted a neutral tint. In multiplying this class of experiments I have now and then obtained a characteristic reaction, and occasionally an evanescent streak of blue; but these were exceptional cases.

The strength of the solution of strychnia in sulphuric acid used in both these series of experiments was one grain in 200 drops; and as the same pipette was used in preparing the solution and in the experiments, each drop contained the two-hundreth of a grain of strychnia.

Now these experiments, though they cannot be taken to prove that the dilution with water of the acid solution of the alkaloid, or the application of the colour-developing substance in solution, must be fatal to the success of the colour-tests, whatever the quantity of the alkaloid or of the acid, they do

certainly demonstrate the great advantage attending the use of the colour-developing substances in the solid state. The experiments, it will be observed, are strictly logical and comparative. The distilled water added to the acid solution of the alkaloid, or to the colour-developing substance, was the only element of variation in the two series of experiments.

That the indistinct, or wholly negative, results obtained when distilled water is added are not due to mere dilution, or increase in the quantity of liquid present, is shown by the following experiment:—I placed five equal drops of the same solution of strychnia in sulphuric acid (1-200th grain in the drop) on each of three porcelain slabs. I made no addition to the first drop, but added to the second drop one drop of strong sulphuric acid; to the third, two drops; to the fourth, three drops; and to the fifth, four drops. I then added to each spot on the first slab an equal fragment of bichromate of potash; to each spot on the second slab, an equal fragment of peroxide of manganese; and to each spot on the third slab, an equal fragment of the permanganate of potash. The reactions were perfect and characteristic in each case, the colours differing only in depth of tint, but not in proportion to the degree of dilution. The peroxide of manganese was remarkable for the duration of the colours, and the permanganate of potash for their brilliancy.

Having now, as I believe, shown the superiority of the colour-developing tests in substance to the same test in solution, and demonstrated the disadvantage of introducing into the colour-tests the element of dilution with water, I shall reserve for another communication the question of the effect of the quantity of the colour-developing substances on the success of the colour-tests, as well as the answer to the three remaining questions.

(*To be continued.*)

DECOMPOSITION OF MILK.

Fresh cow's milk exposed to the air absorbs oxygen, and disengages carbonic acid, the volume of carbonic acid disengaged being greater than that of the oxygen absorbed. This exchange of gas takes place very rapidly after twenty-four hours; and milk in contact with a volume of air greater than its own takes up all the oxygen in three or four days. In an atmosphere of pure oxygen, the absorption of this gas and the disengagement of carbonic acid, takes place still more rapidly. The carbonic acid, says Hoppe, is formed at the

expense of the organic materials of the milk, which undergo a sort of combustion; and, as the volume of the resulting carbonic acid is greater than the volume of the oxygen absorbed it is clear that some of the oxygen of the organic bodies must take part in the formation of the carbonic acid. The author thus arrives at the conclusion that, at the same time the carbonic acid is disengaged, bodies must be formed richer in carbon and hydrogen than the normal ingredients of milk, To determine the nature of these bodies, the author took two portions of the same milk, added alcohol to one, and submitted it to analysis immediately, and analysed the other portion after having left it exposed to air for some days. The results of this and similar experiments repeated many times show—1. That milk which has been exposed to the air leaves considerably less solid residue than fresh milk. 2. That after milk has been exposed to the air it is richer in fatty matters than the same milk having alcohol added to it, and analysed immediately. It seems, therefore, that fatty matters are formed at the same time that carbonic acid is disengaged The author thinks that casein is the subject of these changes.

THE COMPARATIVE VALUE OF BARBADOES AND SOCOTRINE ALOES.

At a meeting of the *Pharmaceutical Society* a paper on the above subject was read by Mr. R. B. Giles, of Clifton.

Mr. Giles doubts whether the comparative value of Barbadoes and Socotrine aloes is fairly represented by their positions in the London Pharmacopœia. Socotrine aloes yield but 56 per cent. of aqueous extract, while Barbadoes will give as much as 80 per cent., and that kind the author believes to be the best which yields the largest amount of aqueous extract. Messrs. Smith, of Edinburgh, have found that aloine is prepared with greater facility from Barbadoes than from any other kind of aloes, and as the purgative property of the drug is supposed to be due to the aloine, that kind must necessarily be the best which yields the largest amount of the active principle. The author has substituted Barbadoes for the Socotrine in the various aloetic pills of the Pharmacopœia, and has found the action of the preparations to be much improved by the change. It is worthy of remark, too. that Dr. Marshall Hall preferred the Barbadoes for his pilula aloes diluta; and Dr. Pereira observes, in his 'Materia Medica,' that although the Socotrine has long been regarded as the best, he believed it to be inferior to the Barbadoes. A traditional preference, the author remarked, always attaches to articles scarce in the market, and this he thought was the

chief reason why Socotrine aloes was preferred to the Barbadoes.

Mr. Simmonds said that the superiority of the Barbadoes aloes was probably owing to the pains taken in the cultivation. The plant was grown, and the extract was prepared, by negroes, who were small holders of land, and who bestowed great care both on the plant and the preparation of the extract. Cape aloes was the produce of a wild plant.

Professor Bently thought the real reason why Socotrine was preferred was the agreeable aroma it possessed, from which it was inferred that it must have a more agreeable action. From Dr. Pereira's experiments, and those of Dr. Clutterbuck, it would appear that there was really no difference in the action of the various kinds of aloes on man; but it must have been from observing the better effects of it, that the Barbadoes was universally preferred for animals. With regard to aloine, he had observed that the crystals of that body obtained from the different kinds certainly differed in size, and somewhat also in form.

Mr. Deane said that when aloine was heated up to a certain temperature the crystals were destroyed. He did not believe that the purgative property of the drug depended on the aloine, for Socotrine aloes, from which aloine could not be made, purged as well as the others. He added, that he had found the preparation of Dr. Marshall Hall's pill, the pilula aloes cum sapone of the present Pharmacopœia, was much improved by the addition of a few drops of liquor potassæ when making the mass. In this way a perfectly homogeneous mass that always rolled well was obtained, which was not the case when the Pharmacopœia form was strictly adhered to The reason of this, he thought, was, that the acid in the treacle effected some decomposition of the soap, which was prevented by the use of the liquor potassæ.

The Chairman (*Mr. Morson*) remarked that the whole subject of aloes was one of great importance, and deserved an extended study. Barbadoes aloes was preferred, because the aloine was most readily obtained from it, and aloine was supposed to be the active principle of the drug. This, however, was disputed by M. Robiquet and other Continental writers, some of whom asserted that it was not a purgative. He repeated that the question was a most important one, the chemistry of which was worthy to be made the subject of a prize essay. The aloine found in commerce was a light yellow crystalline powder, which was used as a purgative; but how it was prepared on the large scale he did not know. The liquid juice of aloes imported deposited it in large quantities.

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Journal des Vétérinaires du Midi, Mai, 1861.

ON EPIZOOTIC MANGE.

By M. Vives, Vétérinaire à Campagne (Landes).

M. Vives says that long before the present era this disease has existed at different times, and that it has been described by Titus Livius four hundred and twenty-four years before Christ. It was also observed at the beginning of the French revolution amongst the cavalry horses. In 1815 it prevailed at the same time as the typhus fever, and we have now to add that of 1854.

At the commencement of that year, mange was the common malady of the solipedes, although only a few pigs were affected with it, and there were some doubts whether it really was the mange in them, or some other skin disease, as they were mostly treated by empirics, and thus no opportunity was afforded of correctly judging.

Causes.—This epizootic affection seems to have followed the course of the principal rivers; and having prevailed generally in low and marshy districts, it was naturally attributed to the scarcity and the bad quality of the provender. To this may be added excessive work, neglect, and want of cleanliness. In support of this view of its origin, the author remarks that it attacked principally the horses of the poor, while those of rich proprietors escaped.

Symptoms.—The principal and most apparent of these is depilation on different parts of the body; a few days elapse before the animal is covered with vesicles, the skin becomes thickened and cracked, small tumours are perceived to exist, and when these are opened, a quantity of serum issues from them, and they are thus converted into ulcers of a reddish colour; the pruritus is excessive, and the mucous membranes are discoloured in these animals which are emaciated.

Treatment.—This was very simple. Reflecting on the cause of the affection, the first act was to improve the diet, and to enforce cleanliness both of the stables and the

patients. The local application employed was an ointment in which sulphur was the principal ingredient. [As the existence of acari is not mentioned, doubts may be entertained as to its being true mange, but only a malignant skin disease.]

A CASE OF TUBERCULOUS DISEASE OF THE LIVER, COMPLICATED WITH PHTHISIS.

By M. Clavel, V.S., à Villefranche-de-Belvés.

The author was summoned to attend an ox, which, according to information, did not feed as usual, and was also covered with lice, which it was stated, had resisted all local applications. On examining the animal, he found him in a very debilitated state, bordering on marasmus; the coat was staring, skin adherent to the ribs, pain was evinced on pressing the spine, the ganglions of the groin were considerably enlarged, the mouth was inflamed, the alvine evacuations were somewhat harder than natural; but all the other functions were normal.

The enlarged ganglions, the sensibility of the vertebral column, with the emaciated state of the animal, led the author to suspect that he was suffering from phthisis; but the exploration of the chest, both by auscultation and percussion, indicated nothing abnormal. Not being able to form a satisfactory diagnosis, M. Clavel prescribed tonic treatment in accordance with the symptoms. Local applications were likewise made to the skin, which soon destroyed the lice. Under this treatment the appetite increased, and there was a slight improvement otherwise; but this continued only for a short time, as the patient died suddenly not long after.

On the autopsia, the intestines were found to be covered with small tubercles; the mesenteric glands were also tuberculated. These tubercles varied in size from that of a walnut to an egg. Having removed the intestines, the author found the liver of enormous size, its weight being 31½ kil. (above sixty pounds). On making an incision into it, its parenchyma was found to be literally studded with tubercles; of these, the largest number were in a state of suppuration, forming large cavities: in a word, nearly the whole of the liver was transformed into pus. The biliary vesicle was contracted and atrophied, and only contained a small quantity of bile. The lungs were healthy, with the exception of one

portion of the right lobe, where a small abscess, the size of a walnut, was found. This, however, was not of a tuberculous nature. The ganglions of the bronchi were considerably enlarged in size, and filled with tubercles in a softened state. The rumen was distended with food, the epithelium could be easily separated in certain parts, the mucous membrane was inflamed in some places, and there the layers of the epithelium were of a red or brown colour, while in other parts the mucous membrane was thickened and infiltrated. All the other organs were normal.

OBSTRUCTION OF THE SALIVARY DUCT (CANAL DE STENON); CURED BY MEANS OF AN ARTIFICIAL DUCT, ACCORDING TO THE PROCESS OF LAFOSSE.

By M. Mottet, V.S., à Soisson (Aisne).

A GELDING, six years old, had a large tumour on the inside of the left maxillary, just at the place where the duct takes a vertical direction. By the pressure of the fingers it was easily perceived that it contained a fluid, which was, in all probability, saliva retained there by some obstruction of the duct. The animal also had great difficulty in mastication. An operation was decided upon, and performed in the following manner:—An incision being made into the tumour, a large quantity of saliva escaped from it. This incision was now extended in the direction of the duct, which was found to be entirely filled with a fibrous substance of a yellowish colour. A long needle, with a seton, was then passed in the direction of the duct into the mouth, while the tongue was pulled out and held on the opposite side by an assistant. The needle being removed, the seton was left in, and tied so as to prevent the end getting between the teeth in the act of mastication; the closing of the incision by suture terminated the operation. It was soon found that the swelling did not recur, and that the saliva followed the seton. Twenty days sufficed to perfect the cure, at which time there was neither swelling nor fistula.

THREE CASES OF TETANUS CURED BY A COMPLEX TREATMENT.

By M. Pauly, V.S., à Perigueux (Dordogne).

The author agrees with the medical profession that tetanus consists in an inflammation of the cerebro-spinal nerves, which is either diffused or circumscribed, and he also thinks, with Gellé, that this inflammation is more particularly confined to the roots of those nerves which are given off from the inferior portion of the spinal cord.

It would be useless to give the symptoms of these three cases, as they do not differ from what is seen in ordinary cases of tetanus.

The treatment consisted principally in the repeated abstraction of blood, to the amount of from three to four pounds each time, and in the administration of the acetate of morphine, combined with sulphuric ether, in an infusion of the flowers of the lime-tree. This was given through the nose, when unable to open the mouth. Camphor ointment was also applied to the spine and masseter muscles.

Clinique Vétérinaire du Mois de Juin, Juilliet, et Août

By U. Leblanc, C. Leblanc, and Weber.

MEETING OF THE 20th OF APRIL.

Général Marquis de Grouchy, Reporter.

The veterinary societies of the Department of the Seine Inférieure, and also of the Eure, have presented some observations on the practice of veterinary medicine, which they have accompanied with a project of law on this subject. Similar ones are also made by the veterinary societies of Charente, Calvados, Manche, and the Loire Inférieure.

First, we have to remind you that, in 1854, 1857, and 1858 analogous petitions were presented to you by several veterinary societies, and that the Senate ordered these petitions to be sent to the Minister of Agriculture and Commerce. The minister, in his report addressed to the emperor on the petitions which had been referred to the different ministerial departments, and after having stated in 1854 that a project of law relative to the practice of veterinary medicine had been under consideration for some time already, announced in 1858

that the fourth and last petition had been added to the other documents, in order to prepare this law; but that other occupations, and perhaps also the difficulty to regulate legally such a matter, have been the cause of the project being adjourned, although we have announced it all but officially.

The petitions of the Department of the Seine Inférieure, and the Eure, of Charante, Calvados, Manche, and the Loire Inférieure, are identical as to the grounds on which they rest their claims, and are also similar to those which you have heard in the three preceding sessions. We will, therefore, content ourselves by a summary recapitulation of the observations already made by the reporters of your Commissioners of Petitions. We will first bring to your memory that seventeen departments and also the Council-General of Agriculture, have long been clamorous for a law to protect the practitioners of veterinary medicine. Sometime ago also the departments of the West, where the greatest number of neat cattle are bred, demanded a fourth veterinary school to be established in a rural district for the special purpose of instructing the pupils in cattle practice. The three schools already in existence, being established in large towns, have the inconvenience of their practical instructions being principally confined to the horse. In these schools instruction is given gratis to 550 students, on an average. The course of study is during four years. After their examination they receive a diploma. A certain number of them find employment in the army; the rest establish themselves principally in the large towns, where they practise mainly hippiatric medicine, which offers them greater advantages. Very few of them go to reside in the rural districts, where their new calling, particularly at starting, would not be very lucrative, and where, on the other hand, they would have to contend against empirics who have been in practice for many years.

These assertions are justified by the official documents which have already been put before you. They have not changed since the annexation of Savoy and Nice. There were in 1858, 2544 civil veterinary surgeons thus distributed —in the 86 chief towns of the departments, 319; in the 363 chief towns of the arrondisements, 451; in the 796 chief towns of the cantons, 1012; and in other localities, 762; total, 2544.

Thus, 2846 cantons of the eighty-six departments—one half, nearly—are unprovided with veterinary surgeons in the interest of agriculture. This is to be very much regretted, since every time an epizootic breaks out it is necessary to

send veterinary surgeons from the chief towns of the departments, at a great expense and inconvenience. In imitation of what is done in Belgium, it has been suggested, in one of the reports to the administration, that perhaps when leaving the school it would be desirable to send the young veterinary surgeons into those localities where they would be most useful: and it is added that in Belgium an indemnity is given to these young practitioners for the first two years. As to the legal points in the petitions presented by these societies, we will not here discuss them in detail; only they appear to us to be a little too restricted, and tending to monopoly. If only to enlighten the government, it seems useful to us to transmit them to the administration, which has been occupied since 1854 with a legislative intervention. From this time, no doubt, preparatory measures have been taken. A circular was sent to the prefects by the Minister of Agriculture and Commerce, directing them to placard the list of the names of all veterinary surgeons who had obtained a diploma. This circular, unquestionably useful in some localities, is of no avail to those who reside seven or eight leagues from any veterinary surgeon; but let us hope that this is the forerunner of an act, either administrative or legislative, which has been so long wanted. After these considerations, we have the honour to propose that these petitions be sent to the Minister of Agriculture and Commerce.

Count Beaumont—I demand to be heard—not to combat the conclusions of the commission, but to support them. The question of veterinary surgeons has long since occupied different committees of agriculture, and in general all the inhabitants of the country (campagnes). You know that first one school was founded, that of Alfort; subsequently two more were formed. The petitioners now demand a fourth school. I oppose this fourth foundation, for this reason,—these three schools provide at present for the pupils a highly scientific instruction, and since hospitals have been added to them they take in sick animals, affording facilities to the students to learn practice, the result of which is the acquirement of a higher attainment of science by them. But these young men, after four years' hard study and labour, and after having undergone a satisfactory examination so as to obtain a diploma, go into the country, where they find themselves in the presence of empirics who have never studied at all, and who, in certain villages, even resort to witchcraft and charms, thereby deceiving the peasants, while the cattle die. It must be borne in mind, that since the first request was addressed to the chambers, agriculture has considerably

improved, making great progress; further, that the rearing of cattle has become more general and rational, as well as much ameliorated; and I am persuaded that if our rural districts had good veterinary surgeons, the loss of cattle by death would be considerably less, and that when epizootic diseases break out, preventive means would be more promptly taken. But, as the report states, there is such a scarcity of veterinary surgeons that on these occasions it is necessary to send them into the different cantons. Why this scarcity? Not that there are not enough graduates, but because those who have passed the schools are obliged after a time to abandon the profession, so as to obtain a living by other means. It is therefore necessary that the administration should secure to them a position by removing empiricism, this pest of the agriculturist, which is both expensive, and of no real service to him. I ask, for these reasons, that the petition which the commission proposes to be sent to the Minister of Agriculture and Commerce be taken into due consideration, as there is involved in it the future of our agriculture, and I energetically support the proposition in order to bring it to a determination.

M. Ladoucette. — I entirely agree in the conclusions come to by the commission, and the statement made by Count Beaumont. It is very extraordinary that, since the time our veterinary schools have been established, there should only be 2544 veterinary surgeons in France.. This number certainly is too small for the great number of horses and cattle we possess, and which we hope will go on increasing. This must be owing to the fact that the position of the veterinary surgeon is not such as to induce young men to engage in it. In my opinion, encouragement should be held out to them. Not only the state, but likewise the departments ought to do this. The honorable reporter has stated what takes place in the departments of the West. I would ask leave to state what takes place in those of the East. In the Department of the Moselle, for instance, where I am a member of the Council General, the necessity of having veterinary surgeons has been so severely felt that the authorities of the department have made a sacrifice, in which the communes have joined. In this department we have primarily established cantonal medical practitioners, and afterwards cantonal veterinary surgeons. The communes in the divers cantons have formed themselves into unions to insure (a *clientèle*) patronage to the veterinary surgeon. The department, on its side, has granted a certain sum of money to assist the veterinary surgeon by small subventions. By these means we have secured a certain number, not enough,

however, but more than we had before. I repeat it, and unite with my colleagues who have addressed you before me, that everything possible should be done to increase the number of veterinary surgeons in our rural districts, and that every effort be made, first by the government, and then by the departments and the communes, so as to arrive at so laudable a result.

His Eminence the Cardinal Donnet.—Gentlemen, I will not combat what has fallen from the reporter, and from MM. Beaumont and Ladoucette; on the contrary, I would strengthen it by demanding that the petition be referred to the Minister of Public Works and Agriculture. But I wish to do more. Nothing is so grievous as the state of our rural districts. When any serious epizootic breaks out amongst the domestic animals, it then becomes necessary to have recourse to the only man who is competent to remedy the evil, and this man is the veterinary surgeon; but as in a certain number of departments there is a great scarcity of practitioners, and as the question has been settled of the departments of the West and the East, I would speak of those of the South, where veterinary surgeons are very scarce, as we have too often witnessed, and it is to the empiric, and to the man of witchcraft and charms, we are obliged to have recourse. It is he who has, to the detriment of principle, and to the great misfortune of the agriculturist, attained a powerful influence over the people of certain rural districts. It may be said that it belongs to us to paralyse, by the influence of religious instruction, an evil which has its source in superstition, and which we seek to uproot wherever we can make our voice heard; but when we are powerless, then the power of justice ought to step in. Why not treat the empiric and the sorcerer in the same manner as you do those who practise medicine without a diploma? I would also ask whether recourse could not be had to the authority of the prefect in those localties, where the empirics and the sorcerers exercise their culpable craft, thereby insulting civilisation and true religion? I therefore demand that the petition be not only referred to the Minister of Agriculture, but also to the Minister of the Interior, for the reasons which I have stated.

The Count de Beaumont.—There is no law to this effect.

Count Boulay de la Meurthe.—This question only concerns the Minister of Agriculture and Commerce, and is in his province.

His Eminence the Cardinal Donnet.—I shall ask, besides, that it be referred to the Minister of the Interior.

The President.—The question is whether the petition shall be referred to the Minister of the Interior, as well as to the

Minister of Agriculture and Commerce, according to the demand of his Eminence the Cardinal Donnet. The commission demands that it shall be referred to the Minister of Agriculture and Commerce, and the Senate seems to approve of this. I will now consult it on the other question, whether it shall be likewise referred to the Minister of the Interior.

The Senate being consulted, pronounced itself in favour of the conclusions of the commission, and decided on the double reference of the petition to the Minister of Agriculture and Commerce, and likewise to the Minister of the Interior.

M. Leblanc, in commenting on this favorable decision of the Senate on the petition, observes, their object being so far attained, it now lies with the Minister of Agriculture and Commerce, and the Minister of the Interior, that every effort should be made. The project of law presented by the minister will have to be examined by the Council of State, then laid before the Corps Législatif, and submitted again to the Senate for their approval. He is satisfied that everything has been done by his colleagues to enlighten their judgments, in having drawn their attention to a question of such general interest, and in the different points of view, such as the industry, the alimentation, and the usefulness of the animals in general, and for the public good; and he has no doubt but that they will persevere in their efforts, and furnish the different powers before whom the question will be agitated with all the facts at their disposal, as on this question depends the existence or annihilation of the veterinary profession in France.

Veterinary Jurisprudence.

NORFOLK COUNTY COURT.

Before THOMAS JACOB BIRCH, ESQ., *Judge.*

NORTH WALSHAM, *Friday, June* 21.

WARRANTY OR NO WARRANTY.

Mr. W. H. Scott, of Aylsham, appeared for the plaintiff, and *Mr. W. L. Mendham*, of Norwich, for the defendant, in the action, the Rev. William Lawson Barnes, Swafield, *v.* John Harvey, farmer, North Walsham, brought to recover the sum of £11 4s. 3d., arising out of a loss on the re-sale of a horse. The question was, it being admitted that the animal was unsound, was there a warranty given when he was sold to the plaintiff? It was pleaded by the defendant that there was not.

The plaintiff said that on the 29th of December last, defendant and his man (John Bullimore) brought the horse for him to look at. On doing so, plaintiff remarked that the animal did not seem right. Defendant replied that he had a little tip on the eye, but that was not much; otherwise he was "right—all over right," which he repeated several times. Plaintiff asked defendant if he would stand by him, and he replied that he would. Plaintiff further said, "You sell the horse sound?" Defendant replied, "Yes; he is sound—right down all to the ground." The horse was then left for trial if he was quiet; and in the evening Mr. Harvey called for his money, the price agreed upon having been £24. The horse was afterwards put to various kinds of work between that and the 15th of February, the first time he again saw the defendant, when he told him of the state of the animal. Mr. Harvey advised him to keep the horse a little longer. Plaintiff said he would not like to begin to doctor him, as it might be used against him; when defendant replied that he should not take advantage of that. On the 19th February, plaintiff again saw defendant, and informed him that he should return the horse next day. Defendant answered that he had not given a "written" warranty with the horse, and should refuse to take him back. Plaintiff said, if he made a difference between a written warranty and his word, he should consider it a swindle. The horse was sent and refused, and was finally sold at Norwich, on the 6th of March, for £15 15s.

Cross-examined.—Defendant did not say, "With the exception of the eye, he is all right to the best of my knowledge." After he received payment, he said, "Suppose he loses his eye, he will be worth £15." Plaintiff did not say, "I suppose you sell him sound with the exception of the eye." The horse was paid for in two cheques, one of which was post-dated, being made payable in April. Plaintiff was advised not to stop payment of it, as defendant might bring a cross-action for the whole. The horse was put to various kinds of work—at the plough, in the muck-cart, and in the family carriage, and hunted with the hounds. Two of his teeth were knocked out in the hope that this would help him to feed better. [A laugh.] The last time he was out with the hounds was on the 5th of February; and previous to that time there was nothing that he was put to which he would not do.

William Beckerson, the plaintiff's steward, deposed to having heard defendant, when he brought the horse for his master to look at, tell Mr. Barnes that he was "right—all over right;" that "he was sound—right down all to the ground." His future experience with the animal proved that these statements were far from correct.

Cross-examined.—The horse was left with plaintiff all the afternoon of the 29th of December, during which he was worked, and in the evening was bought. Witness did not hear defendant say, "Suppose he loses his eye, he will be worth £15."

Mr. William Shipley, veterinary surgeon, said he was requested by the plaintiff to examine the horse in dispute on the 15th of February. A twelvemonth previously he had seen the animal, and then reported him as unsound from enlarged hock, although incipient spavin was then in existence. When witness saw him again on the 6th of March, he found a complete cataract in the eye, produced, in his opinion, by the continuous inflammation to which it had long been subject. The horse was also suffering from diseased kidneys. In cross-examination, Mr. Shipley said that the animal was a "familiar friend" of his; and in reply to the court, stated that it was bone-spavin with which he was affected, a twelvemonth before the 15th of February last.

This closing the plaintiff's case, *Mr. Mendham* commented at some length upon the evidence, characterising it as somewhat singular that the plaintiff had made no complaint about the horse from the 19th of December until the 15th of February, which was all the more wonderful when it was borne in mind that the parties lived only about a mile distant from each other. His great contention, however, was, that no warranty had been given by his client when the animal was sold; and if he was now suffering from the unsoundness described by the plaintiff and his witnesses, he submitted that it was the result of injuries sustained while out hunting with Mr. Barnes or his family.

The defendant said that he purchased the horse of his brother just before last harvest, at the cost of £20. He admitted saying to plaintiff that even if the horse went blind he would still be worth £15, but this conversation occurred before the animal was left for trial in the afternoon of the 29th of December. Nothing was said about a warranty, or that defendant would be accountable for his eye at all. He had no recollection of saying that the horse was "sound down to the ground." What he would swear to saying was, that he thought the horse would suit plaintiff. Before he was bought Mr. Barnes said, "You sell him sound?" Defendant replied, "I don't know anything to the contrary." He knew the horse would not pass a "veterinary" in consequence of his eye; and he solemnly swore that he never engaged to stand by him. Defendant never warranted a horse in his life; and had no remembrance of telling the plaintiff that he had heard the animal had been returned to a former owner because of unsoundness. From the time defendant bought him till he sold him to Mr. Barnes, the horse had worked regularly on his farm, and was found to do his work well.

Cross-examined.—Defendant would swear positively that nothing was said to plaintiff about a warranty, nor anything to that effect. He did not think the horse was fit for a hunter at the time he sold him to plaintiff.

John Bullimore, defendant's steward, deposed to having had some conversation with Beckerson about the horse after the plaintiff had complained about his unsoundness; in the course of which Beckerson remarked that "Mr. Barnes was a heavy man and not a good rider, and perhaps he had hurt him." The horse did any work he was put to uncommonly well all the time Mr. Harvey had had him.

George Hudson, another of the defendant's labourers, and defendant's brother, *Mr. Charles Harvey*, farmer, gave evidence showing the qualifications of the horse while under their charge. No horse could have done his work better.

His Honour said he was of opinion that a warranty had been given to the plaintiff when he bought the horse of the defendant, who, if he was not aware that the horse was actually unsound at the time, had, he feared, a very strong suspicion that there was something wrong. Mr. Barnes must have been raw and green indeed, if, under the circumstances, he had purchased the horse without having received an assurance from the defendant that he would stand by him.

Judgment for the plaintiff for £10 9s. 3d., being 15s. less than the sum claimed, which item (the veterinary surgeon's fee) his Honour said could not be recovered.

HOLT, *Monday, June* 24.

There were about 100 cases on the list, but the only one that created any interest was the following:

PURCHASE OF A HORSE; WARRANTY; ARCHER *v.* RINGER.

This was an action to recover the sum of £25 5s. 9d., being loss arising out of the re-sale of a chestnut gelding horse bought under an alleged verbal guarantee of soundness, &c. As is usual in suits of this kind, the question to be decided was—Was there a warranty, or was there not? *Mr. Drake*, of Dereham, appeared for the plaintiff, Robert Archer, dealer, Great Snoring; and *Mr. Mendham*, of Norwich, for the defendant, John Ringer, farmer, Briston.

The plaintiff deposed—In the early part of last January, I went to defendants to look at a horse which he had for sale, and on asking him if he would warrant him sound, he replied, "He's perfectly sound, quiet to ride, but never harnessed; but I shan't give a written warranty." Defendant agreed to keep him for a month for me on account of the severe weather which existed at the time. I again saw Mr. Ringer, at Cawston fair on the 1st of February, and asked if he would keep the horse another week. He expressed his willingness to do so, but the horse was drawn on the 5th, and the price paid for him was £40. When I went for the horse, defendant said he had a slight cold, but that it was of no consequence—that it would soon wear off. I thought so myself. From that time the horse became gradually worse. I therefore had him put into a loose box, where he was kept ten days before being tried by my man, who, on returning from exercising him, complained about his restiveness. I afterwards tried him myself, and never saw a more restive beast in my life. I subsequently wrote to defendant several times, telling him to come and see the horse, and to bring with him the man (Richard Perry) who informed me of Mr. Ringer having the animal for sale, but no notice was taken of my communications. After this, I saw the defendant, and asked him to take back the horse; to which he replied that he considered such a request as very childish. I told him I did not think there was anything childish in it—in giving £40 for a four-year-old horse, believing him to be sound, and, on finding that he was not what had been represented, in requesting the seller to take him back into his own hands. The horse having been examined by Mr. George Baldwin, veterinary surgeon, and pronounced unsound, I gave the defendant notice that he would be sold by auction, and that defendant would be held responsible for any loss. The horse was accordingly sold on the 28th of March, at Messrs. Spelman's repository at Norwich, where he fetched £20 9s. 6d. There was 5s. charged for sending him there; the commission on the sale was £1 3s. 3d.; the cost of his keep up to the time he was sold amounted to £4 7s., making a total of £5 15s. 3d. to be deducted from the price he realised, reducing the actual sum he had been worth to £14 14s. 3d., which being set against the £40 paid to defendant, left a difference out of pocket of £25 5s. 9d., the amount sued for.

Cross-examined.—The time I have charged for the horse's keep is from the 5th of February till the 27th of March, the rate being at 12s. per week. I kept him in the stable ten days or a fortnight before trying him. I punched two of his teeth out to bring his mouth forward. [A laugh.] I was to have him a week on trial. I do not recollect defendant saying when I first saw him on the subject, "If you take him *now*,

you can have him a week on trial; and if you don't like him, you can bring him back at the end of that time, and I will take him again." I will not swear Mr. Ringer said, "I will not give a warranty;" but I will swear he said, "I will not give a written warranty." Perry was present when the bargain was made, and heard what passed. Before I had him taken out for trial, I had given him a few balls to prepare him for the season; but he got no medicine, as in the state of his health he would not stand that. Mr. Baldwin pronounced him unsound in his eyes from ophthalmia. I have been a dealer twenty-eight years, and consider I should be a good judge of a horse. I have returned a few horses I have purchased; but this is the first action I have ever brought to recover compensation in damages for breach of warranty. At the time of making the purchase, I examined the horse so far as the weather would permit. There was no external blemish about him, nor indeed did I discover any defect whatever. The 27th of February is the date of the first letter I sent to Mr. Ringer, asking him to take the horse back, although I had made personal complaints to him previously on the subject of his not coming up to the warranty he had given me when I bought him.

Re-examined.—I distinctly said to defendant before concluding the bargain, "You sell the horse sound?" when he replied as I have already stated. The teeth that were taken out were those that he would have shed in the course of the spring, and the want of which could in no way depreciate the value of the animal.

William Flood deposed.—I saw the horse mounted when the plaintiff had him taken out for trial. He was thoroughly restive.

Cross-examined—I have heard that Messrs. Spelman's groom can make a horse do anything. [Laughter.] I have had considerable experience in horses; but I do not think that punching a couple of teeth out would make a really quiet horse restive.

Mr. Mendham.—You never had a dentist about you; I suppose?—*Witness*—Oh, yes; I've a bad tooth now. [Renewed laughter.]

George Baldwin, veterinary surgeon, said.—On being called to examine the horse in question, I found him unsound from constitutional ophthalmia, but cannot state how long it had been in existence.

Cross-examined.—I mean by "constitutional," something that exists internally.

By the Court.—I hardly think that the shutting up of the horse in a hot stable for several weeks would alone produce such a degree of inflammation as to cause the ophthalmia under which I found the animal suffering. The date of my seeing the horse was the 19th of March.

This closing the evidence on behalf of the plaintiff, Mr. Mendham submitted that there was no case to answer; but the learned judge held that there was so far as related to restiveness. Upon this,

The *defendant* deposed.—When the plaintiff and Perry came to me about the horse now in dispute, he was in my yard along with other horses. He was not tied up. On a halter being put on his neck, he was led out. I ran him first, and then Perry. Mr. Archer asked if I would warrant him? I said, "No. I have lived eight or ten years with an uncle who never warranted a horse; and he told me if ever I sold one, never to warrant him. And I intend to follow his advice." I said I knew he was quiet, and I believed he was a sound horse. I knew he was quiet because I have ridden him, and seen Perry ride him.

Cross-examined.—Plaintiff never asked for a written warranty. I told him I would not warrant him in any respect. I admit promising to receive the horse back after a week's trial, but it was on condition

that Mr. Archer took him away at the time he bought him. The horse was sound and quiet all the time I had him.

Richard Perry.—I heard the conversation between plaintiff and defendant when the horse was sold. Mr. Archer asked Mr. Ringer if he would sell him sound. Defendant said he would warrant nothing; but that if he liked to take him away then, he would receive him back again if at the end of a week he did not please. That's the chief of what I have got to say.

Mr. Drake.—That's what you've come to say, I see.

Alfred Clarke.—I live at Wood Dalling. I bought the horse at Messrs. Spelman's sale, but knew him before. I have had him since Tombland fair. I can and do ride him. He is quiet.

Cross-examined.—He was always quiet, and never to my knowledge showed any symptoms of restiveness. Defendant occupies a farm belonging to my father, to whom Mr. Ringer is cousin. I went to the sale to buy him if I could. He was a little shy about the head when I had him first.

Edward Coe.—I am in the service of the last witness, whom I have seen ride the horse, and I have worked him myself. He goes as well as any horse need go. He is very quiet.

Cross-examined.—He had a double-reined bridle when I worked him.

His Honour observed that, after balancing the testimony which had been adduced on both sides, he was satisfied of two things—first, that no warranty had been given with the horse; and secondly, even if there had, that no breach of it had been proved. So far from that, indeed, there was very strong reason for believing that the horse had been, and now was, a quiet and sound animal. It was the most improbable conception imaginable that young Clarke, who had previously known the horse, would have gone to the sale purposely to buy him if he had been aware that he was unsound and restive; while, speaking for himself, he would say that if he (his Honour) wanted a horse, and knew of a good one to be sold with a bad character, he should certainly try and get him if he could. If however he were to keep the best and quietest horse that had ever been foaled in a stable seven or eight weeks without once being ridden, and let the dentist operate upon him during that time—and there were few horses that were not taken to the dentist's once at least in the course of their lives [a laugh]—there would be little to wonder at if he showed a degree of "spirit" on being first taken out. He repeated that he believed the horse in question to be a quiet horse, if properly managed; but even if he were otherwise, there had not been the slightest evidence to show that the defendant knew to the contrary. His judgment would therefore be for the defendant, with costs.

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Communications and Cases.

ON ENLARGEMENT OF THE PLEXUS CHOROIDES. CASE OF SUDDEN DEATH OF A PONY.

By R. H. Dyer, M.R.C.V.S., Waterford.

The remarks of Assistant-Professor Varnell on Mr. Vick's case of "enlargement of the plexus choroides" are so much appreciated by me, that I cannot help sending you a short history of a similar case, which occurred in my practice a few months since.

A pony, *thirty-three years old*, was brought to my infirmary apparently labouring under congestion of the lungs; she had been in uninterrupted good health for many years; indeed, I never heard of her being ill, and I have seen her frequently for the last ten years or more. She had been driven a distance of twelve miles rather quickly, and on coming homewards, about midway she faltered in her pace, and gave up, being *dead beat*. With difficulty the proprietor, his assistant, and a few men, managed to literally push her into town—a distance of six miles. I was immediately summoned, and upon examination I concluded that the little sufferer had been overdriven. It was in vain to look for any particular symptom, as the powers of nature were well-nigh exhausted, indeed, they had almost ceased, as is generally the case on the approach of death. I administered some restoratives, but in a few hours the pony breathed her last. A *post-mortem* examination was made—not, however, by the wish of the owner, but for my own satisfaction; it being my custom, if possible, to examine every animal dying under my treatment, and it almost invariably happens that I observe something worthy of being recorded. After exploring the various cavities and their

contents, I examined the brain, and observed that the plexus choroides in the right ventricle were much enlarged, and that a deposit of granules, the size of mustard seeds, six in number, had taken place among the vessels. This case proved, beyond doubt, the correctness of Mr. Varnell's opinion, that such deposits do not necessarily cause much inconvenience. I would add, however, that when I have met with these deposits, it has generally been in animals whose life has been hurried to a termination by some extraordinary excitement, or similar cause.

REMARKS ON CASTRATION.

By the Same.

The August number of the *Veterinarian* contains two articles upon the above subject, which as it is, without doubt, one that the profession is more or less interested in, I venture to offer a few remarks upon.

When I came to this county, in 1849, I was requested to perform the operation of castration with caustic clams, as my predecessor was reported to have done so for some years, with great success. At first I thought it an ingenious method, besides saving much trouble and annoyance, but I occasionally found a difficulty in overcoming the action of the cremaster, which retarded the operation. One thing I was convinced of, viz., that the pain which the animal suffered shortly after the operation, was more severe and lasted a longer time after, being often continuous for six hours. I was at all times very anxious about my patients, especially if they happened to be in my infirmary. Occasionally I have had half a dozen or so under my immediate care, at one and the same time. I cannot say that I liked this mode of operating, because it entailed another and somewhat hazardous proceeding for the removal of the clams. This part of the operation I found to succeed best on the fifth day. The manner of casting for the operation is objectionable. I have had a few broken backs during my short career, but never one under my present system of casting the animal, and as I have not met with any writer who has described either the plan of operating or casting which I pursue, I will endeavour to describe both of these.

Although I am acquainted with a medical practitioner who employs Acid. Sulph., in his treatment of some kinds of

lamenesses in man, when all other known remedies have failed, I am not about to advocate the use of the actual cautery, nor to condemn it, but at another time, perhaps, I may feel disposed to make a few remarks upon this plan of operating. To proceed. When I have a colt to castrate, I secure only three of his legs, and since I have adopted this plan, and it is ever since I abandoned the use of the clams, I have never had an untoward symptom. In the first place, if an animal is cast and secured in the ordinary way by fettering the four feet, the back is arched, and when so, it becomes something similar to a piece of bent stick, which the least thing will cause to snap. It will bear more pressure, more weight, or more violence when perfectly straight, than it will when it is bent, and I believe it is the same with the back of a horse. Observe, if only for a moment, the struggles of an animal when down, with all the legs secured, and compare it with one which has three only. The *un*fettered leg is the only one which he now uses to disengage himself, and I believe it is this which will account for my success of late, in performing the operation. But to the operation itself. I employ a ligature as recommended to me by Professor Spooner; but I have found it necessary, or rather I should say advisable, also to use a heated iron, as it causes inflammation quicker, and consequently a swelling of the parts. As to the application of unguents and all allied agents, I abandon all of them, contenting myself with the use of water only. With reference to the use of a pair of curved scissors in the operation, I can speak with confidence, having frequently employed them when I have met with a very obstreperous patient.

As there are, in my opinion, several objections to the use of caustic clams, I will take the liberty of mentioning them. The *first* is, that of the operator being obliged to fetter all four feet. As a general rule this must be done when an animal is thrown for other operations, but then the risks or hazards are fewer in number; so far, therefore, it is an advantage. The *second* objection is, that of placing the animal upon his back, for in this position he has a greater power to struggle than he has when lying upon his side. The *third* is the difficulty experienced in drawing the testicle down to its proper position. The *fourth* is the immense suffering the animal undergoes for at least six hours afterwards; added to which is the loss of the services of a man for other purposes, as he must be in attendance upon the patient, and often during the entire night. The *fifth* and last objection is the annoyance of having to remove the testicles and clams upon a subsequent occasion.

One of the evil consequences of castration is that of champignion, which by the way I never saw after the other method of operating. I have had many cases of champignion brought to me for treatment after castration by the clams.

Perhaps the present is a good opportunity for stating that I have met with several horses with *stringhalt* which I *knew* to have had *scirrhous cord*. If other practitioners were to turn their attention to this point, it might possibly lead to some satisfactory result.

These remarks were hastily thrown together after reading the papers referred to, and which I did with much interest, notwithstanding I do not concur with the statements that are made. Did time permit, I should like to extend my observations upon castration, and perhaps at some other and more favorable opportunity, I may do so. Should these remarks have the effect of causing a few to think, I feel assured that good must result.

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 390.)

Brassica oleracea (*Cabbage*).

"*Leaves fleshy, glaucous, waved, lobed*, partly *lyrate*, all *quite smooth*. *Flowers* pale yellow. *Root* fibrous"—(*Lindley*).

Next in importance to the turnip, for the large amount of valuable food it supplies both to man and animals, are the different varieties of cabbage. Like the turnip, it belongs to the natural order *Crucifera* and to the tribe Brassica. The wild cabbage, from which all our different varieties have been produced by cultivation, is found in many parts of this country growing upon rocks and cliffs in the vicinity of the sea. It flowers in May or June, having small yellow flowers. Few would recognise in this bulky and almost worthless weed the original source of some of our most valuable foods and esculents. Its cultivation has been much attended to from the earliest times, and it was held in high esteem, both as a food and medicine, by the Greeks and Romans.

As most persons are familiar with the many varieties of the cabbage, I shall confine my remarks to that kind which is most commonly cultivated as food for animals, viz., the

white, or drumhead cabbage. These are usually planted in spring, and will grow in almost any situation, but thrive best in a deep, strong, mellow, loamy soil. They require plenty of light and a large quantity of manure, and have been considered by many agriculturists to be very exhausting to the soil. Be this as it may, they yield an abundant and valuable supply of food, which is much liked by all kinds of cattle, and is especially valuable when given to milch cows, in combination with hay, increasing the quantity of the lacteal secretion, and not imparting that disagreeable flavour to milk and butter which turnips frequently do.

Cabbages have been known to attain the weight of thirty to forty pounds each, but the average size in a good crop do not generally exceed one third of this weight. According to Mr. Sinclair's analysis, "one pound of drumhead cabbage contains 430 grains of nutritive matter, and 312 grains of fibre."

Dr. Voelcker says, "that no kind of green food cultivated on a large scale in the field contains so much nutritious matter as cabbage."

The following observations from Lindley's 'School of Botany' will give a general outline of the remainder of this tribe of plants: "The genus Brassica is the parent of a large number of plants in common cultivation. Cabbages, Savoys, Brussels sprouts, are varieties of Brassica oleracea, with large leaves; when the stem is enlarged into a fleshy, turnip-like knob *above* the ground, it forms the Kohl Rabi, or Knol Kohl; when the flowers are very imperfect, and crowded together in close heads before expansion, they form what are called brocoli and cauliflowers. Brassica nassus has produced all the turnips except the Swedish, the origin of which is unknown; Brassica rapa is chiefly valuable for ploughing in while green, and for its seeds, which, under the name of rape and colza, are crushed in large quantities for oil, the residue being given to cattle as "cake," or "oil-cake."

A few further remarks will be necessary to bring more particularly under notice one of the above-mentioned plants, viz., the *Brassica caulo-rapæ* (or *Kohl-rabi*). This plant, although cultivated in many parts of the country, has not received that general attention from the agriculturist which its importance and value as food for animals deserves. Its produce is similar to the Swedish turnip, but it possesses the following advantages, viz., it will grow and produce a crop upon land which will not produce a crop of turnips. It can also withstand a dry season and a considerable degree of frost. It does not impart that disagreeable flavour to the

milk and butter when given to milch cows, which is often produced by the turnip. To these good qualities may be added this important one, that in nutritive value it is twice as valuable as common turnips, and "materially surpasses the Swede; Swedes showing 1·5 per cent. of albuminous or nitrogenous compounds; Kohl-rabi as much as 2·75 per cent." Two varieties are in common cultivation—the green and purple. The average produce per acre is from twenty-five to thirty tons. Dr. Voelcker says that, "as food for lambs it far surpasses white turnips, and is equal to any kind of green food with which I am acquainted." A detailed analysis, &c., by the same author, of the cabbage and Kohl-rabi, will be found in the October number of the *Veterinarian* of last year.

With these observations I propose to conclude my comments on the cruciferous plants, and shall next refer to another plant which is largely cultivated as food for animals, viz., the "mangold-wurzel;" and in doing so bring under notice another natural order.

Before, however, leaving the cruciferous plants, I would say a word with a view of urging all those who may feel interested and inclined to follow me in these observations, to avail themselves of every opportunity which the season now affords, of collecting and examining as many as possible of the plants belonging to this and the other natural orders. The vegetable world for the last two months has been arrayed in all its floral grandeur and magnificence. It will soon be gone; even now—

> "The autumn sheaves are on the hill,
> And solemn are the woods, and still."

And in a few short weeks all their beauty will be buried in the "freezing solitudes" of winter's gloomy reign.

(*To be continued.*)

FIBRINOUS CASTS FROM THE INTESTINES OF A COW.

By E. J. Bovett, M.R.C.V.S., Bridgewater.

On June 13th, I was sent for to see a cow belonging to Mr. Ameslay, of Puriton, which the messenger informed me, "had her inside coming out like strings." On my arrival, I was shown the substance, part of which I have sent per rail for your examination. The owner informed me that

he thought the matter voided was a "worm of some kind," and that there was, at least, ten yards more than had been shown me. I observed a portion which had been trampled on, and partially dried by exposure to the sun, and was convinced his estimate was within the mark.

The fæcal matter with which it was voided scarcely left a stain, it was so thin and watery. Here and there, lying about, were small evacuations, in one of which there was about an inch of the supposed worm. The animal was in fair condition for a milch cow, and the only indication of a deviation from health which I could perceive, was a fulness and redness of the eyelids. She was so wild that I could only come within a few yards of her; and being away from her companions, she defied all our efforts to get her into a pen, and leaped the Barton gate and several stiff fences, to escape us.

The owner informed me that she had calved in January last, and that since then she had occasionally had an attack of diarrhœa, to remedy which he had bled her, and given her a drench containing some mustard, about a fortnight since. He also said that she had yielded her usual quantity of milk until this morning, when she only gave about a quart, and that shortly after being milked she commenced to scour, and voided the matter above described.

My opinion was that it was the mucus in some changed condition; but I could not account for such a quantity being thrown off, and in such a form. Had the mustard anything to do with causing it?

[The specimen sent by Mr. Bovett consisted of a quantity of fibrine, which had effused in a fluid condition from the vessels of the mucous coat of the intestines, and subsequently by its clotting had become moulded into the shape of the tube. Cases of this kind are not very uncommon among bovine animals, and several of them have been published by us from time to time. The slight deviation from health, and the rapidity with which the fibrine is thrown out, go to prove that the effusion does not depend on inflammation of the mucous coat of the intestines. In Mr. Bovett's case, as in most others, there were but few indications of disturbed health. It is not improbable that the mustard might have some connection with the effusion, but having been administered a fortnight previously, it can scarcely be supposed to have acted as the immediate cause.

These fibrinous casts have been described by the ignorant as instances of the voiding of snakes and other allied reptiles

by the ox. To the pathologist they are exceedingly interesting and instructive.

RUPTURE OF THE DIAPHRAGM OF A HORSE.

By W. Carless, Veterinary Student, Stafford.

On the 7th of June last I was requested to attend a bay carriage-horse, ten years old, the property of Matthew Lyon, Esq., of this town. When I arrived, which was about six o'clock in the evening, I was informed that the horse had been taken a journey of ten miles, and that on his way back he was noticed suddenly to become so very sluggish that it was with great difficulty he was got home. Arriving at home, he began to tremble as soon as he was put into the stable, and also refused to take any food. I found him standing with his muzzle resting on the manger, and shivering. The body and extremities were cold; the breathing quick and laboured; pulse 55, weak and irregular, and the visible mucous membrane of a purple hue. He coughed occasionally, which, however, was not an unusual thing with him. The bowels were constipated, and the abdomen distended with gas. I ordered his body to be clothed, and legs bandaged, and in other respects to be made as comfortable as possible.

Gave—

Aloës Barb., ℥v, in ball; and

Sp. Æther. Nit., ℥j;
Sp. Ammon. Arom., ℥j;
Tinct. Opii, ℥j;

as a draught.

Chilled water was ordered to be placed within his reach, and also a bran mash.

8th, 10 a.m.—He had not lain down during the night. The breathing was more laboured, and accompanied with frequent sighing. The pulse 50, and irregular; mucous membranes congested; nose and legs cold, but the body somewhat warmer than last evening. Small quantities of blood were oozing from his nostrils. The abdomen was more distended, and the bowels had not acted. He refuses all food.
Gave—

Sp. Ammon. Arom. ℥j;
Sp. Æther. Nit., ℥ij;

in a pint of gruel, also administered a clyster, and ordered it to be repeated every two hours.

5 p.m.—Pulse very indistinct. Mouth, nose, and extremities cold. The sighing is more frequent, and twitchings of the muscles have come on. Blood continues to flow from his nostrils at intervals. The abdomen is more distended, and slight griping pains are present. He staggers when his head is elevated.

Gave—

Turpentine, ℥ij;
Sp. Æther. Nit., ℥j;
Ol. Lini, ℥viij.

Ordered the clysters to be continued.

I told the owner that there was very little chance of recovery, and that I suspected a rupture of some of the internal viscera existed, most probably of the diaphragm.

10 p.m.—Found him very much worse. The coachman said that he had been sweating profusely during my absence. He was now suffering severe abdominal pain, and when down was unable to rise without assistance. The bowels had not acted, and it was evident he would not last long. At about twelve o'clock death put an end to his sufferings.

Post-mortem.—In consequence of death taking place at midnight on Saturday, I could not have him opened until the Monday morning, when I found the bowels much distended with gas, but containing very little alimentary matter. On removing the intestines, I observed a rent in the diaphragm at least eighteen inches in length. It extended from the centre part of the viscus to the left side. A portion of the colon had protruded through the opening into the cavity of the chest, and became partially strangulated. The lungs were very much congested, but with this exception no thoracic disease existed.

It is worthy of observation that this horse was supposed to be "broken winded" for several months previous to his death. This, I am inclined to believe, might depend upon a small rent existing in the diaphragm. If so, then we can understand how the lesion might become suddenly increased in size, and led to the quick termination of the animal's life.

INFLAMMATION OF THE OMASUM OF A COW, ASSOCIATED WITH CEREBRAL SYMPTOMS. DEATH.

By J. Wood, Coleshill.

The subject, from which the omasum sent was taken, was a short-horned heifer, three years old, in good condition. She had calved about three months, and was never known to be unwell until the evening previous to my seeing her. She was not then very much out of health, with the exception, as the owner said, of her having lost her milk. She gradually, however, got worse, and I was sent for at 9 p.m.

June 20th.—Upon my arrival I found the following symptoms: animal standing in a semi-comatose state, with the nose level with the ground, and pressing her loins against the wall. She was moaning, and apparently suffering great pain. At times she would arch the back and stretch out the tail, as if about to urinate. The pulse was very quick and small. Ears, horns, legs, and surface of body unnaturally hot. Conjunctival membranes injected; eyelids swollen; a flow of tears, and nose dry. Had not dunged since yesterday. I endeavoured to turn her round, but she staggered and fell forward on her knees. When down she extended her head, and thrust her muzzle into the straw, a position in which she seemed to be in the greatest ease to herself. My diagnosis was that it was a case of inflammation of the stomach, and that I feared an unfavorable result. Notwithstanding this opinion, I was requested to try what could be done, and therefore I first abstracted blood (from four to eight quarts), and afterwards administered a brisk cathartic, combined with a diffusible stimulant. This was followed by another cathartic early the next morning, and during the day she was liberally supplied with oatmeal gruel horned down.

21st, 4 p.m.—No amendment. Pulse quicker, and nearly imperceptible at the jaw. Bowels constipated. Cannot rise. An oleaginous purgative was given, and another left to be administered early on the following morning.

22d, 4 p.m.—Upon my visit to-day, I found on going into the box that she was lying with her head up, as if better; but upon examination this opinion was at once disproved. The eyes were fixed, neck crooked (as if in a state of parturient apoplexy), and pulse thready, with every indication of a speedy dissolution. She continued to get worse until about

two o'clock in the morning of the 23rd, when death put an end to her sufferings.

On my arrival to make the *post-mortem*, the carcase was cut up, and the omasum removed for my inspection, the owner thinking that it was all which required to be looked at. I found the lungs healthy, but much congested. The heart presented a black-mottled appearance, but the pericardium appeared unchanged in structure. The rumen was filled with half-digested food, which, on removing, small pieces of coagulated blood were seen, like worms, upon its roughened surface. The reticulum was apparently healthy. The abomasum was also inflamed, and the bowels slightly so. They contained *fluid* ingesta. The omasum I have sent for your own inspection. The brain was so much injured in cutting the horns off, that I could not judge of its condition.

Remarks.—The field in which this cow with the others was turned, is situated on the side of a hill, at the bottom of which the river Tame runs. The herbage is considered to be of the best quality, and contains nothing, in our opinion, of a deleterious nature. There is a pond of water in the field. The river water is mixed with all kinds of deleterious matters, and to such an extent that no fish will live in it. Of late years, the water of several gas works and the factories from Birmingham has been emptied into it. The cows sometimes drink from the river, although there is other water, as stated, which is available for the purpose. The meadows were flooded by the overflowing of the river several times during the winter, besides which it not unfrequently flows over the grass growing on the side of the stream and the low places adjacent. The only manure used upon the meadow is of the best quality, brought from Birmingham.

Do you imagine that the disease arose from the animal drinking at the river, or is it only an aggravated case of omasitis arising from ordinary causes?

[The omasum which we received in due course from Mr. Wood, was filled to repletion with ingesta that had evidently been retained for some time, without undergoing little or any softening from the secretion of the viscus. The coats of the stomach were deeply reddened from inflammation, but there was nothing in the appearance of the parts to lead to the supposition that any *special* cause had given rise to the morbid action. It is to be regretted that Mr. Wood did not send us the other stomachs, that we might have come to a better conclusion on the point which he has referred to us.

G. W. V.]

ON "GRASS-STAGGERS," &c.

A Communication from Mr. Jas. Storrer, V.S.

Turriff, *August* 12, 1861.

Gentlemen,—In the bustle of an extensive country practice I have very little time to write, and am also known to my intimate friends as being a notoriously lazy correspondent. This statement may account for my not having written anything for the *Veterinarian* for probably about three years; I do, however, find time to read it, and I embrace the present opportunity to express the pleasure with which I have perused such papers as those by Professor Brown, Mr. Watson, and many others.

The immediate cause of my present communication is an article, published in your last number, by Mr. MacIntosh, describing a disease which he calls "grass staggers." I hesitate not to say that I am perfectly satisfied that the cases he describes are not caused by perennial rye grass or any other grass, and that the symptoms detailed are distinctly those of lead-poisoning. Mr. MacIntosh subscribes himself a student; and yet he goes on to detail treatment in the first person singular, as if he had by the labour of years matured his views.

"Our hope is in the young," is a truism which all, who are interested in a good cause, place great value upon—but the young can only be a source of hope, if they are at first careful, cautious, and, may I say plodding, students, using well the means within their reach for laying in a stock of information, and only venturing to take the place of teachers when fully able to sustain the position. Mr. MacIntosh evidently has not made himself acquainted with our veterinary literature of some twelve or fourteen years' standing, else he could not have failed to detect some preparation of lead in the stomach of the animal he dissected. I would now merely refer Mr. MacIntosh to the paper of the late Mr. Cuming, of Ellon, on "Lead-poisoning," published in the *Quarterly Journal of Agriculture of the Highland and Agricultural Society*, about the year 1849 or 1850; and I cannot but regret that so valuable a treatise has not yet appeared in the columns of the *Veterinarian*, as no more useful paper ever graced its pages.

Allow me, however, to state that Mr. MacIntosh might not have spurred me up to the writing of this letter, had I not felt that we, as a profession, are perfectly inundated with

loose, indefinite, and altogether useless literature—literature solely intended to bring the writers into notice.

We in Scotland have been called upon to buy and read *vade mecums, treatises, veterinary reviews,* with many other works of a similar class, all of which, however, are destitute of any practical value to the agriculturist or the veterinary surgeon, being written by men who either have no knowledge of their own to communicate, or no discrimination to cull the most useful parts of other men's writings.

Yours, &c.

To the Editors of 'The Veterinarian.'

Facts and Observations.

DIAGNOSIS OF GLANDERS.

M. Bouley, the eminent professor at the Veterinary School of Alfort, near Paris, lately made several eloquent speeches at the Academy of Medicine in support of a peculiar symptom of glanders, looked upon by him as pathognomonic. This symptom is a small ulceration on the mucous membrane of one of the nostrils. Amongst the arguments and facts brought forward, the following anecdote was related:—About ten years ago, the buyer and seller of a valuable horse brought the animal to be examined at the school, the seller being accompanied by his veterinary surgeon. The buyer was afraid the horse might have the glanders, as there was a rather abundant secretion from one nostril; the seller of course contending that this was a symptom of mere catarrh. M. Bouley examined the horse, and, having stretched the nostril, saw on the mucous membrane a small ulceration, of the size of a pin's head, and forthwith pronounced the horse affected with glanders. The veterinary surgeon, who was by far M. Bouley's senior, scouted the idea of such a thing; and after much discussion, it was agreed that the animal should be killed, and that the seller should refund the money if the horse were found to have glanders. M. Bouley encouraged the buyer to risk this, being sure that his diagnosis was correct. The horse was killed, and at the autopsy it was found that glanders really existed. In fact, all the usual alterations were observed, such as ulcerations in the upper part of the nostril, pus in the sinuses, tubercles and abscesses in the lungs, &c. Still, this horse looked perfectly healthy,

had been publicly sold at Paris, and warranted by an experienced veterinary surgeon. The discussion originally arose in the Academy upon a case of glanders communicated from the horse to a man, who had eventually recovered.—*Lancet.*

POISONING OF PIGS BY NITRATE OF POTASH.

We were recently consulted with reference to the probable cause of the sudden death of two pigs, the property of a gentleman residing in the neighbourhood of London. It appears that it was his custom to have the pigs fed on refuse rice and other grain, after it had been boiled.

The whole of the old stock being exhausted, a fresh supply was obtained, from which the two pigs in question were fed, for the first time, on a Sunday morning, and were then left till the after part of the day. On the man's second visit to give them their evening feed, he was surprised to find both the animals dead.

A *post-mortem* examination showed the villous coat of the stomach to be deeply reddened in colour, and presenting such an appearance on the whole as to lead us to request that some of the food might be forwarded to the College for investigation. This being done, a considerable quantity of broken crystals of some salt was detected among the grain, which, on a further examination, were found to be fragments of nitrate of potash. The proportion of this agent in the quantity of the food was ascertained to be about a drachm to every pound.

Nitrate of potash has long been known to be poisonous to the lower animals when given in large doses; but the fact, in this instance, is chiefly valuable in putting the purchasers of *refuse* grain for the feeding of pigs and other animals on their guard against the injurious consequences that are likely to follow. Both rice and nitrate of potash being East Indian productions, it is not unreasonable to suppose that they got accidentally mixed either in the warehouse or on board ship during the passage.

PREVALENCE OF ENTOZOA AMONG THE HORSES IN THE ISLAND OF SINGAPORE.

A short time since we received from Mr. C. Emmerson, M.R.C.V.S., Singapore, some specimens of the *Oxyurus*,

commonly called the whip-worm; which he had found in a horse. He says, that half the horses in the island are affected with these worms, and that they give rise to obstinate skin affections and emaciation, which become increased in severity by the bad stabling and management of the animals. He adds that he has succeeded in expelling large quantities of these worms by the exhibition of calomel, followed up by aloes; and also by administering potassio-tartrate of antimony for six consecutive mornings, half an hour before the animal is fed, and then giving an aloetic purge. He has likewise used turpentine enemas with advantage, but still many worms are left in the intestines. The natives fail to rid the horse of these entozoa by their remedies.

EXISTENCE OF FILARIÆ IN A SINUOUS ULCER OF THE WITHERS OF A MARE.

We have been favoured by Mr. Bovett, M.R.C.V.S., Bridgewater, with some *filariæ*, which were found by him in a fistulous sinus, situated on the withers of a mare. He says that besides the worms sent there were many more, which, at first sight, he took to be disintegrated fibres of ligament, and wiped them away with the discharge coming from the wound. His attention was arrested by observing motion in the supposed fibres, which led to a more careful examination and detection of the parasites.

The annals of veterinary medicine are singularly deficient in cases of this kind, but numerous instances are recorded in human surgery. The Museum of the Royal College of Surgeons contains many similar specimens of worms, some of which were found in encysted abscesses, and others in ulcerative sores, &c. We are glad to be enabled to record a fact of this interesting description.

URINARY DEPOSITS IN SHEEP.

Mr. Mather, M.R.C.V.S., Doncaster, informs us that he was recently consulted respecting the death of some year-old rams, from intense inflammation of the bladder and urethral canal. The disease had its origin in calcareous matter blocking up the urethra in its course through the vermiform appendage of the penis, and producing retention of urine.

Cases of this kind are of frequent occurrence, and will continue to be so under the present system of high feeding, unless means are adopted to preserve the digestive and assimilative functions in perfect health. These vital functions are overtaxed by the quantities of cake, corn, roots, hay, &c., supplied to the animal, and hence the origin of the urinary deposits. The exhibition of aperients, conjoined with a greater amount of exercise than is usually allowed rams which are being made up for sale or letting, will often have a most beneficial effect as a prophylactic.

Some ram breeders depend on diuretic agents to *prevent* these urinary deposits, and give for this purpose nitrate of potash, oil of turpentine, and balsam of copaiva; and according to their statements with the greatest benefit.

We have often succeeded in removing the stranguary by a gentle manipulation of the vermiform appendage, rolling it between the fingers. A partial and complete removal of this organ by excision is also practised, and with success, in so far as the immediate results are concerned; but it is to be remembered that such rams are likely to prove sterile. It was at one time believed that animals thus operated upon were effectually prevented from getting lambs, but experience has shown to the contrary. There is, however, too much uncertainty respecting the preservation of the procreative power to warrant us in recommending such animals being kept for stock purposes. Wether sheep placed under similar circumstances of feeding and management are likewise the subjects of the disease, but ewes never; for the obvious reason that all sabulous matter can easily be expelled through the *meatus urinarius*.

MACHINE-MADE HORSE-SHOES, AND THE "WORKING FARRIERS" SOCIETY.

A LARGE meeting of the Amalgamated Society of *Working Farriers* was recently held at the Soho Theatre, to protest against the application of the American invention for making horse-shoes by machinery. The chair was occupied by Mr. W. Mann. Several speakers addressed the meeting, and resolutions were adopted to the effect that all "society men" should refuse to put on shoes made by non-society men during the slack season, when the society men were out of work; and that after the 26th instant, all members

of the Horse Fund Association should refuse to work upon either machine-made shoes or shoes made by non-society men.

EFFECT OF FRESH PAINT ON HEALTH.

At the last sitting of the Paris Academy of Sciences, M. Chevreul gave an account of a paper sent in by M. Leclaire, a house-painter in Paris, describing certain curious experiments made by him with a view to ascertain the effects of new paint on animal life. M. Leclaire's method is this:—He had deal boxes made, of the size of a cubic metre each, and painted white inside, with white lead in one case and the white oxide of zinc in the other, with the intervention of essence of turpentine. Cages containing rabbits were then put in, and the effects watched, with the following results:—1. The animals did not suffer particularly when there was a sufficient current of air through the boxes. 2. They suffered during the first twelve hours when the current of air was suppressed, after which time they gradually recovered, none dying during the experiments. 3. None of the animals appeared to be affected by the paint when dry; hence M. Leclaire concludes that emanations of oil of turpentine are not dangerous when fresh, in ventilated apartments, and that as soon as paint is dry it is innocuous, whether the apartments be ventilated or not.

M. Leclaire made also some other experiments for the purpose of obtaining deposits of these emanations from the fresh paintings of houses. Instead of rabbits he placed plates containing a small quantity of water in these chests. After the water had evaporated from the plates he found some remarkable crystallizations like needles, which consisted of combinations in which the oils or essences employed formed the principal part. These crystalline combinations were obtained even when linseed oil, essence of lavender, or benzine were used. He further ascertained that water absorbed nothing when the paint was dry.

M. Chevreul added that, having himself placed two vessels, one containing water and the other essence of turpentine, under a glass receiver, he after a certain time found perfectly limpid crystals in the water, which he considered to be of the same nature as M. Ste. Claire Deville's hydrates of essence of turpentine.

THE VETERINARIAN, SEPTEMBER 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —CICERO.

AUSTRALIAN LEGISLATION WITH REFERENCE TO PLEURO-PNEUMONIA.

A BRITISH colony has set the mother country a notable example. The legislative assembly of Australia has passed an Act to prevent the extension of pleuro-pneumonia. Our antipodal brethren rightly refused to fold their arms and look indifferently on while an insidious foe was destroying their present hopes and future wealth. How many thousands of British cattle would have been preserved to us if we had acted as promptly and energetically on the original appearance of the disease! We cannot now calculate our loss, but of this we may be assured, that the saving would have been immense. Much, however, as this apathy is to be regretted, it is as nothing compared to that still existing among agriculturists on the subject. They seem perfectly content to let things take their course, if so be they can exercise the privilege of grumbling over their losses. They desire to remain passive observers of the continuous destruction both of their own property and the food of the people.

Practically, they daily arrive at the erroneous conclusion, that because pleuro-pneumonia is an incurable, it must necessarily be a non-preventible, disease. This may have had its origin in a want of scientific knowledge, but if so it is an additional reason why they should both listen to others and inquire for themselves. Each class has to look after its own interests, and all are properly very jealous of this right; but farmers ever seem to require some one to tell them what things they need, and what they should strive to either quit or retain. Without they can be made to agitate this question, nothing will ever be done, for our liberal Government is far too conservative of abuses to adopt means for their removal unless compelled to do so by public opinion. Their

liberalism never fails to find an excuse for allowing an evil to go unredressed. The people must take the initiative, and it is this great lesson which must be taught the occupiers of the soil. We could understand something of their inaction if the disease attacked old, ill-conditioned, or inferior animals alone, but it is an undisputed fact that no breeds are exempt nor any age secure. Prize cattle, which may be individually worth their hundreds for stock purposes, are alike the victims of the malady with the worst-bred animals of the farm. It was a knowledge of this fact which caused so painful an interest in Australia on the introduction of the disease. The new settlers saw that unless something were done, not only would their efforts to improve the native breeds be abortive, but that even these would fall a sacrifice in countless numbers to the extension of the malady. The measure is a strong one, but not more so than is required to meet the exigencies of the case. Much will depend on the way its enactments are administered, and, from our knowledge of the ability of a portion of the commission appointed under its provisions, we feel confidence in this being rightly done.

We give the Act in full, and refrain from further comment on its provisions at this time.

An Act to prevent the further spread of the disease in cattle called Pleuro-pneumonia.

30th April, 1861.

VICTORIA.

WHEREAS it is expedient to check by legislative enactment the further spread of the disease in cattle called Pleuro-pneumonia. Be it therefore enactment by the Queen's most Excellent Majesty, by and with the advice and consent of the Legislative Council and Legislative Assembly of Victoria in this present Parliament assembled, and by the authority of the same, as follows :

I. The Governor in Council is hereby authorised to appoint three persons to be commissioners to carry the provisions of this Act into effect, and from time to time to remove any of the commissioners so appointed, and on the death, resignation, or removal of any commissioner, to appoint another person in his stead.

II. Before any commissioner shall exercise any of the powers given by this Act his name and address shall be notified in the *Government Gazette*, and he shall also make and subscribe before some justice of the peace for the colony a declaration in the form contained in the first schedule to this Act.

III. The remuneration of the commissioners shall be fixed by Parliament, and shall be paid to them out of such monies as shall be provided by Parliament for that purpose.

IV. The commissioners, on receiving information in writing from any owner or occupier of land that the disease called pleuro-pneumonia is believed to exist in any cattle, may enter upon any land where such cattle may be, and examine the same; and if the commissioners shall deem it proper, they may cause to be slaughtered for examination by some qualified veterinary surgeon one or more of such cattle, wherever the same shall be found; and if in the judgment of the commissioners the disease shall exist in such cattle, they may order such number of them as they think proper to be forthwith destroyed, and may make such other order in relation to all or any of such cattle, and the carcases thereof, with a view to prevent the spreading of disease as to the commissioners may seem proper.

V. The commissioners or any justice, on receiving information in writing that any cattle are diseased or have recently been exposed to the disease, may order such cattle to be detained at, or removed to, the nearest convenient place, and the commissioners may then examine such cattle and cause one or more of them to be slaughtered; and if in the judgment of the commissioners the disease shall exist in such cattle they may order the remaining cattle, or such number of them as may be thought proper, to be forthwith destroyed, or may make such other order as aforesaid.

VI. The commissioners shall ascertain and determine, and shall certify under their hands in the form contained in the second schedule to this Act, the value of all cattle destroyed under this Act by their order, and which shall appear not to have been affected by the disease, and the value so certified shall be paid to the propriotor of the cattle, out of the monies granted by Parliament for this purpose, and the treasurer shall, on the deposit with him of the said certificate, issue an order for such payment.

VII. If any owner of cattle destroyed by order of the commissioners and not affected with the disease shall feel aggrieved by the valuation of the commissioners, he may require the commissioners in writing to appoint an arbitrator,

and such owner may appoint by writing under his hand a second arbitrator, and such arbitrators shall by writing under their hands appoint a referee, and such arbitrators and referee shall proceed to appraise the value of such cattle so destroyed, and such valuation, or, if they shall disagree, the valuation of any two of them, shall be conclusive, and shall be paid to such owner, as before provided.

VIII. The commissioners shall send to the treasurer a duplicate of every certificate given under this Act.

IX. Every owner of cattle having reason to suspect the existence of the disease in cattle in his possession shall immediately by writing inform the commissioners or any one of them thereof, and every owner who shall fail so to do, or who shall resist any justice or commissioner in the exercise of the powers of this Act, or who shall refuse or wilfully neglect to comply with any lawful order of the commissioners, or who shall sell, give, or cause, or suffer to be removed off his land, any animal which he knows, or has reason to suspect, is affected by the disease, shall, on conviction before any two justices of the peace of the colony, forfeit all claim to compensation for any cattle destroyed under this Act, and shall further pay a sum not exceeding one hundred pounds, and in default of payment of such fine shall be imprisoned at the discretion of the same justices for any period not exceeding six months.

X. The Governor in Council may by proclamation, which shall be published in the *Government Gazette*, declare any part of the colony in which the disease has been found to prevail to be "an infected district," and shall by such proclamation define the boundaries of every such district, and after such publication no cattle shall be removed out of any such district until the same shall have been proclaimed to be free from the disease, and any person removing cattle out of such infected district, without the consent or permission in writing of the commissioners, shall on conviction before any two justices forfeit and pay any sum not exceeding fifty pounds, and in default be imprisoned for any term not exceeding six months.

XI. The Governor in Council may make rules respecting any cattle brought into the colony by sea or land, and for preventing the introduction of the disease or of any other contagious disease in cattle, by any system of quarantine, or by the destruction of cattle believed to be affected by the disease, for compensating owners of sound cattle destroyed, and generally for carrying the provisions of this Act into effect, and any rules so made and published in the *Government Gazette* shall be of the same force as if enacted by Parliament.

Such rules shall not be inconsistent with the provisions of this Act, and may from time to time by the like authority be rescinded, added to, amended, or altered; and thereupon such rescission, addition, amendment, or alteration, after publication thereof in the *Government Gazette*, shall be of the same force as if it had been enacted by Parliament. The Governor in Council may, by the rules so to be made and published, impose such reasonable penalties as may be thought fit, not exceeding fifty pounds for each breach thereof. Provided that the justices before whom any penalty imposed thereby shall be sought to be recovered may order the whole or part only of such penalty to be paid.

XII. Any two of the commissioners for the time being shall have and may exercise all or any of the powers and discretions conferred by this Act on the commissioners.

XIII. No proceeding had or taken under this Act, or under any of the rules to be made in pursuance hereof, shall be removed into the Supreme Court by writ of *certiorari* or otherwise.

XIV. In the construction of this Act the word "owner" shall include the person in possession or having charge of any cattle, and the word "disease" shall mean the disease called pleuro-pneumonia, and the word "land" shall include land comprised in or forming part of any station or land which has been alienated or leased by Her Majesty, or land forming part of any reserve or common, or of the waste lands of the Crown.

XV. This Act shall continue in force for one year, and thence until the end of the then next session of Parliament.

SCHEDULES.

THE FIRST SCHEDULE.

I, A. B., of do solemnly and sincerely declare that I will, to the best of my judgment, honestly exercise the powers conferred by the Act for preventing the further spread of the disease in cattle called pleuro-pneumonia.

THE SECOND SCHEDULE.

The undersigned, being commissioners appointed under the Act [*here insert title of Act*] certify to the treasurer that A. B., of is entitled to the sum

of sterling for head of cattle destroyed under the provisions of the said Act.

Given under our hands at in Victoria, this day of 186 .

We add the official announcement of the appointment of the commissioners, extracted from the *Victoria Government Gazette* of Friday, May 3d, 1861, and heartily wish them success in their execution of their responsible but patriotic duties.

CHIEF SECRETARY'S OFFICE,
MELBOURNE; *2d May*, 1861.

Commissioners under the Pleuro-pneumonia Act.

The Governor, with the advice of the Executive Council, has been pleased to appoint—

JOHN MISCAMBLE, M.R.C.V.S.,
CHRISTIAN SPLIDT O'GILVIE, and
ANTHONY ADRIAN SMITH, M.R.C.V.S.,

all of 131, Lonsdale Street west, Melbourne, to be the commissioners to administer the Act intituled *An Act to prevent the further spread of the disease in cattle called Pleuro-pneumonia.*

By His Excellency's command,
R. HEALES.

Extracts from British and Foreign Journals.

STRANGE ACCUMULATION OF BONES.

In a lecture lately delivered by Professor Ansted, he says:—"In the cavern at San Ciro, near Palermo, there is an enormous deposit of bones. Twenty tons' weight of the bones of the hippopotamus have actually been taken from it within a very recent time for the sake of burning into animal charcoal. Now, it is quite clear that there can have been no accumulation of bones of this kind by human agency. All the hippopotamuses ever brought into Italy by the Romans, if accumulated together, could hardly have sufficed to fill this one cave; and, not far off, bones of 300 individual hippopotamuses have been found in another cave. It is quite clear that the cavern existed for a long period as the habitation and burial place of the large quadruped whose bones are so abundant. In our own country the caverns have been used for similar purposes. In the limestone rocks in Yorkshire, Devonshire, and elsewhere, there is good proof that they served as dens, for we find in them the remains of bears and hyænas in enormous numbers, and occasionally remains of elephants, rhinoceroses, and hippopotamuses. Generally speaking, each cave seems to have been inhabited by one group of animals, and as the caverns have generally been partly excavated by water and partly filled up by aqueous drift, so, in some instances, they have been entirely filled up, and almost obliterated. The Sicilian cave of Maccagnone is a remarkable proof of the accumulation of these bones. There is a bony breccia on the bottom of the cavern, and on the roof of the cavern is another mass, which is really a part of the same breccia as that found on the floor. The whole of this cavern must at one time have been filled with this breccia, which has since been partially carried away by the sea."

By the above extract we are reminded that on visiting some of the bone-caverns in the Mendip Hills not long since we were particularly struck with the immense numbers of the "long bones" therein existing, in association with others, of the bear, the hyæna, the deer, and the horse; and what was perhaps even more remarkable, the bones appeared not to be at all mineralized, and to contain nearly the whole of their gelatine. Probably they owe their high state of preservation to the débris in which they were imbedded.

It would be out of place here to enter upon the question, how these remains became thus deposited. By some it is thought that the animals furnishing them were once natives of those places in which their bones have been discovered, but that the climate and other circumstances have so changed since as no longer to enable them to live there; by others, that by the waters of the general deluge wild and other animals were driven together into these caverns, as places of refuge, and there drowned. Confirmative of this latter view is the fact, that among the fossil bones of animals have been found many of such as are now altogether extinct, especially of the larger herbivora. "It appears that the devastating effects accompanying the vast change which this planet then underwent were so extensive, that not only some species of quadrupeds were entirely removed of some genera, such as the elephant, rhinoceros, and hippopotamus, of which other species still remain, but that other genera, as *mastodon*, *palæotherium*, and *anoplotherium*, were completely annihilated through all their species."

In reference to these accumulations, Professor Ansted says:—"On land, near England, then slowly emerging out of a sea traversed by icebergs, having a climate greatly varied, but on the whole warm, there roamed, at a very distant period, elephants and rhinoceroses, large deer and musk oxen, gigantic bears, tigers and hyænas, and numerous smaller animals, many of which are still common. In the rivers of this land, or in pools and lakes there, were many species of hippopotamus, and we may safely conclude that there was a corresponding vegetation. It could hardly have been a small tract to support these gigantic quadrupeds; it is more likely to have been a fragment of one much larger which had been partly submerged.

"The hyænas and the bears then occupied caves in the limestone rocks as dens, and carried thither their prey. The British islands formed no separate group, and the whole Continent of Europe was probably but an archipelago."

DEATH OF SHEEP FROM WORMS IN THE STOMACH.

We transcribe the following correspondence from the *Mark Lane Express*, as it will tend to give greater publicity to the circumstance of entozoic diseases being greatly on the increase, and more especially among cattle and sheep. We hope ere long to take this subject up, and to lay before

our readers numerous cases of the kind, giving our views with regard to the probable cause of these entozoa.

To the Editor of the 'Mark Lane Express.'

SIR,—I should feel obliged if you or any of your numerous correspondents could give me any information on the following subject. I have of late lost several ewes, but from what cause I am at a loss to know, until the other day, when, on opening one of them, my shepherd discovered a large quantity of small thread-like worms (rolled up in balls about the size of a walnut) in the second (?) stomach. As I never met with an instance like it before, I should be glad to know if there is any remedy which can be applied. I send for your inspection the worms taken from the sheep that died yesterday.

I am, sir,
Yours respectfully,
JNO. HAYWARD.

SUTTON; *July* 26, 1861.

To the Editor of the 'Mark Lane Express.'

MY DEAR SIR,—I have examined the worms which you forwarded to me, as having been received from Mr. Hayward, and find they belong to the class *filaria*. These entozoa have of late been very prevalent among sheep, and they have also been met with under the most opposite circumstances of feeding and management. They are, I believe, an undescribed variety of the *filaria*, and were first seen by me about three years since, when investigating the unknown cause of death of some valuable lambs, intended for stock purposes. Since then I have found them in numerous instances, and in sheep of all ages, as also in districts as far removed as the eastern and western counties.

The losses from the presence of these worms have been in some instances very heavy, and they will, I fear, continue so to be; for it is not until the system of the animal gives way to the continued drain upon it that their existence is suspected. They are found to fix themselves on the inner surface of the *fourth*, or true digestive stomach, by inserting their heads into the mucous membrane, and are enabled to keep their hold without much effort, despite the peristaltic action of the stomach, by being furnished immediately behind their heads with four barbs, whose points turn backwards, after the

manner of a fish-hook. This peculiarity of structure, together with their general anatomy, can only be observed, however, by the aid of the microscope; but it is exceedingly instructive and interesting, and especially to the physiologist. The source or origin of these worms is at present unknown.

The symptoms arising from the existence of the entozoa are analogous to those of rot, and consist principally of long-continued wasting of the animal, and its ultimately becoming dropsical—death being sometimes preceded by diarrhœa. With regard to the treatment, we have fortunately several means at our command which are well calculated to effect the removal of the worms, and thus get quickly rid of the cause of the disease. These means consist of dosing the sheep—first, with salt and water, three fourths of an ounce of salt to half a pint of water; and, secondly, following it up by the use of sulphate of iron and gentian powder, a drachm of each to the same quantity of water. Give the solution of salt once a day for three or four days in succession, and then commence the exhibition of the sulphate, and continue it for four or five days. Benefit also results from change of food, and especially the feeding of the sheep on rape. At all events, be the food what it may, the animals must be well kept, or they will fall a sacrifice to the dropsical effusions which take place beneath the skin and into the different cavities of the body.

I am, my dear sir,
Yours very truly,
Jas. B. Simonds.

Royal Veterinary College; *Aug.* 2, 1861.

ROYAL AGRICULTURAL SOCIETY.

LECTURE ON THE NATURE AND CAUSES OF THE DISEASE KNOWN AS ROT IN SHEEP.

By Professor J. B. Simonds.

(*Continued from p.* 353.)

With regard to the symptoms by which we recognise rot, it is universally admitted, I believe, at least by all practical men, that in the earliest stage there is no great depreciation of the value of the sheep, that it does not apparently suffer any inconvenience, but that it rather accumulates flesh faster. The explanation of this is easy enough. The small flukes enter into the liver, not perfected, but having, of course, to

be so, both in size and in the development of their generative system. When they first pass in, although, perhaps, in very considerable numbers, they simply act as a stimulus to the action of the liver, and consequently call forth an increased secretion of bile; and as there is no alteration in the character of the secretion, the sheep, being fairly supplied with an ordinary amount of food, will make relatively a larger quantity of blood out of such food. The liver being in a state of activity, and scarcely bordering upon disease, the sheep will lay on a larger quantity of flesh. We have an authority for this in the observations of the late Mr. Bakewell, and since his time, as well as before, the same thing had been observed, but not to the same extent. I have had a good search through different works to find the authority for the statement, and in Arthur Young's 'Farmer's Tour in the East of England,' vol. i, he thus writes:—"Relative to the rot in sheep, Mr. Bakewell has attended more to it than most men in England. He is extremely clear, from long attention, that this disorder is owing solely to floods—never to land being wet only from rains which do not *flow*, nor from springs that *rise*. He conjectures that the young grass, which springs in consequence of a flood, is of so flashy a nature that it occasions this common complaint. But, whether this idea is just or not, still he is clear in his facts, that floods (in whatever manner they act) are the cause. Perhaps the most curious experiment ever made in the rot of sheep is what he has frequently practised. When particular parcels of his best-bred sheep are past service, he fats them for the butcher, and to be sure that they shall be killed and not go into other hands, he rots them before he sells, which, from long experience, he can do at pleasure. It is only to flow a pasture or meadow in summer, and it invariably rots all the sheep that feed on it the following autumn. After the middle of May, water flowing over land is certain to cause rot, whatever be the soil. He has acted thus with several of his fields, which without that management would never affect a sheep in the least; the water may flow with impunity all winter, and even to the end of April, but after that the above effect is sure to take place. Springs he asserts to be no cause of rotting, nor yet the grass which rises in consequence, unless they *flow*. Nor is it ever owing to the ground being very wet from heavy rains, unless the water *flows*. This theory of the rot (adds Young) upon the whole appears satisfactory, and that part of it which is the certain result of experience cannot be doubted." Speaking of watering meadows, in vol. iii of same work, p. 310, he says that Mr. W. White, a

tenant of Mr. Frampton's, of Moreton, Dorset, "remarked, and it is the general observation of the county, that those watered lands never rot sheep in the spring, though they immediately follow the water, or are turned in at any time, or in any manner; but if they are turned into the after-grass, it merely rots till the autumnal watering, after which they are safe. They keep their sheep in till May-day, which, they assert, would be sure to rot them, was not the land watered; and, also, that the very best land in the country for rotting is perfectly cured by watering."

Subsequently to this the deviations from health are exceedingly slow, and it may be said that they are insidious. It is very difficult, therefore, for us to say what are really the early symptoms of rot, if we except this accumulation of flesh. There can be no doubt that in an advanced stage of the disease, we take cognizance of the affection very readily; but unfortunately it happens that the symptoms which then show themselves are such as to prove that the system is quickly breaking up, and that the time has passed for curative measures. At first, I say, these symptoms are exceedingly insidious, but subsequently to this accumulation of fat they are well marked. For instance, after a certain length of time we find that such animals have an occasional cough, that their appetite is somewhat impaired and fastidious—to-day feeding pretty well, to-morrow scarcely at all. They will be easily acted upon by all external causes, and if exposed to wet and cold will suffer a great deal of inconvenience. Much of the progress of disease will depend upon the treatment to which the animals are subjected. I may say, by the way, that I am familiar with one case in which a gentleman in Norfolk, who has a sandy-heath farm, purchased some sheep in the latter part of August in one year, and he was not aware that they were affected with rot until the February of the following year. Being satisfied that the sheep had not received the disease while they were in his possession, he sought out the dealer from whom he bought them, and on tracing the matter out, it was ascertained that other portions of the same flock were also affected; the dealer consequently took them back and paid the cost of them. The slow progress of the disease was entirely due to the circumstance that the sheep were placed upon a dry sandy soil, and well supplied with highly nitrogenized food, and not exposed to great inclemencies of the weather. Had causes of the opposite kind been brought into operation, the disease would have much earlier declared itself in the most unmistakeable manner. I have stated that the animals have an

impaired appetite; subsequently there is a gradual wasting of the body, and this is a matter of some importance to us, because we find it takes place even before other symptoms which are looked upon as unmistakeable evidences of the existence of the disease show themselves, at any rate to any great extent. It is always a suspicious circumstance if you find that animals have done remarkably well, and then towards the latter period of the year, when they should be maintaining their condition, they begin to waste. If you put your hand upon them and find them "lean on the back," as it is called, that the vertebræ are sticking up, and are bare of flesh, if you find the animals "razor-backed," if I may use the expression, it is a pretty good indication that they are affected. This state of wasting being once established, it continues, and we then get a pale state of the skin, which becomes of a yellowish tint, and very frequently it may be said that jaundice to some extent becomes associated with dropsy. If you open a sheep which is in a somewhat advanced stage of the affection, what will you observe with regard to its fat? That it is particularly yellow; and if I were an inspector of the metropolitan markets, and were to see a number of sheep which were very deficient both in flesh and in fat, and that which existed was of a yellow colour, I should at once infer that they were affected with rot; and I know from experience that I should rightly come to such a conclusion. We afterwards find that the inner angle of the eye becomes exceedingly pale, so that when we evert the lids and press forward the *membrana nictitans*, we find, instead of its being in a healthy condition, that is, covered with a number of red lines, marking vessels through which the blood flows, that, the blood being deprived of its red cells, the organ is colourless. Now, it may be said this is little more than shepherd's knowledge. Well, we admit that it is shepherd's knowledge, but it is nevertheless valuable to us as far as it goes, especially if we associate it with other symptoms. Next we have, generally speaking, a symptom which shows itself in conjunction with this wasting, this fastidious appetite, this yellow state of the skin and unhealthy condition of the wool, and blanched state of the vessels, namely, increased thirst. You generally find that the sheep, having the facility of getting down to the water, will very frequently be drinking to a much larger extent than healthy sheep will do. This evidently arises from the circumstance that there is a great drain going on upon the system, that the blood itself is being deprived of its watery parts, and that water must be taken into the organism to

make up for the drain. We find further, that as the disease advances a variable state of the fæces exists; sometimes the sheep will be scouring, and at other times nothing of the sort will be observed; and it is always a suspicious circumstance to find sheep in the autumnal months occasionally scouring. I would rather see a sheep with a regular lax condition of the bowels, than one with a relaxed state to-day and an opposite state to-morrow, which may continue for three or four days, and then give place to a lax condition again. We can easily explain how this is. The bile will be poured out irregularly into the intestinal canal; and as it is now changed in its character, it will act as an irritant to the mucous membrane of the intestines. Besides, the flukes frequently form mechanical impediments to the free flow of the bile, when they have so comported themselves as to crowd into the passage; but when this impediment is overcome, there is a great flow of bile, and the contents of the intestines are necessarily carried off in the form of fluid fæces. Of course, such animals lose their strength very quickly. They are dull, dispirited, and often found lying down. As the disease advances, the breathing becomes somewhat difficult; the wool is easily removed; œdematous swellings, as they are called, begin to show themselves and to accumulate in different parts of the body, more particularly under the lower jaw. These are nothing more nor less than dropsical effusions; the animal is anæmiated; the blood is surcharged with serum, and then these effusions finding their way into the areolar tissue in different parts of the body, and passing freely through it, accumulate particularly, as just observed, under the lower jaw. Why is this? Because the animal frequently has its head pendant, and in the act of feeding gravitation of the fluid takes place. This anasarcous condition marks a similar state of the internal organs; thus you get effusions into the cavity of the abdomen, and hence many a rotten sheep will have an enlarged, pendulous belly. The emaciation continues until it leads to the death of the animal. It may die within a short time—a few weeks; but even under the most unfavorable circumstances, it is rare that an animal will die in less than six weeks or two months; death, however, may be protracted for a much longer period. I come now to speak of the treatment of the disease. The treatment of rot, speaking of it as curative, must have for its end and object the removal of the cause, and if we have these entozoa which are the proximate cause of the affection, all our efforts must be made to the displacing of them from the biliary ducts. It is to be borne in mind that we have to combat, not only with

the cause, which is a continuous one, but with the effects, which are also continuous. I make this remark for the purpose of adding that I believe, if we were enabled at the present moment to take sheep in an advanced stage of this disease, as they would necessarily be at this period of the year, and give them any agent which would destroy or remove from the biliary ducts (which I do not believe possible) every fluke contained in them, we should not succeed in saving their lives, because, as I have endeavoured to show, the presence of the flukes produces mischief in two ways; it leads to organic changes in the structure of the liver, and the breaking up of the entire organism of the animal. We cannot put a new liver into the animal, and the powers of life cannot be supported by us long enough to bring the system into a normal state. But, although I say this, it is equally true that we must look to the cause, for the purpose of getting rid of the effects. I repeat the remark, because it is important to remember that there is no multiplication of these creatures in the biliary ducts. If, therefore, we were to adopt treatment and effect their destruction early in the case, when there were but few of the entozoa, it would necessarily be attended with success. We are to measure the danger of the animal by the number of flukes existing in the biliary ducts, and by the length of time they have existed. It is proved by daily experience that we can resist to some considerable extent the inroad of the disease, and we have, therefore, to look to the means which are at our disposal for the purpose of keeping the animal body together, if I may so express it, that the ultimate loss shall not be very great. Now, how is this to be done? It is to be done, in the first place, wherever it is practicable (but it is not always so), by protecting sheep from the inclemency of the weather; and in the next place, by abstaining as much as possible from all succulent vegetable food—all food which has an excess of moisture. We should give the animals as much nitrogenous food as we possibly can, so as to lay the foundation for pure healthy blood, and at the same time throw tonics into the system, with a view of medicinally strengthening it. What should these consist of? It is rather difficult when a man has 500 or 600 sheep to be giving them tonic agents in the form of draughts, and we are obliged to choose something which will of itself be unobjectionable to the animal. Sulphate of iron is an excellent tonic for purposes of this kind. Not only is it a good invigorator of the system, and an agent which sheep will take readily, but it is to be borne in mind, that it is in itself a very excellent anthelmintic, and may do much good

in that way. So that if in December or January I had taken a number of sheep affected with this disease, but not the subjects of structural change in the liver, and given them nitrogenous food, protecting them as much as possible from the weather, and exhibiting to them sulphate of iron—if I had husbanded the animals' powers to the greatest possible extent, and added also, from time to time, some salt to their food, I have no doubt I should not only have kept the sheep alive, but been enabled to sell them as fair food at a small price in the market. If, however, all these things are neglected, then I shall have to deal with the ultimate consequences of the malady. I may just add that experiments have borne out what I have now stated.

You will be aware that this society has lately voted a certain sum of money for new experiments to be made with regard to the treatment or cure of rot. We are indebted to a gentleman present, M. Tréhonnais, for directing the attention of the agricultural community to this supposed means of cure. He has also kindly forwarded to the institution a quantity of medicine from France, with which experiments will be begun immediately. Now, without any analysis of the medicine, I am well aware of the principles that have guided the individual in the making of the medicine. He looks upon the disease as one producing perfect prostration of the vital powers, and he attemps to throw tonics into the system, especially giving instructions that the sheep should be kept as much as possible from wet and cold, and have the most generous diet. I was about to say, that very frequently where you have only a limited number of entozoa, as they do not increase in the liver, if the simple plan of protection with the use of nitrogenous food, and so forth, is persevered in for some time you may often save your animals. I did that many years ago. I purchased a lot of rotten sheep; I gave them no physic of any kind, but merely kept them in sheds during the winter time, feeding them with corn and cake, and giving them the most generous diet I could; and I not only prevented the further progress of the disease, in several of these cases, but the animals even accumulated flesh, and they went into the market in the following spring, as fair meat for the people. This shows what can be done by generous diet and protection of the animals. These remarks may cause a smile, but it is not to be presumed we are desirous as farmers of sending rotten sheep into the market, especially when we remember that a man has been sentenced to six months' imprisonment in Newgate for the offence. Nevertheless, we must secure as much food for the people as

we possibly can. When we have animals in this condition, there will be a great advantage arising from the employment of diffusible stimulants, and such, which to some extent, are also powerful anthelmintics. For example, we may use turpentine (which the animals must of course be dosed with) in conjunction with sulphuric ether as invigorating agents. If I were to take half a dozen sheep, and simply give them sulphuric ether with oil of turpentine, day by day, attending to the other things that I have mentioned, not neglecting salt as a stimulant to the digestive organs, I think it very likely that two or three of them (according to the stage of the disease) would be greatly benefited by the treatment. But that is really not the great question for us to consider. We are not to become advocates for the curing of rot in sheep; but we are to become advocates for preventing the disease, and that is the reason why, as bearing upon this point, I detained the meeting so long with regard to the natural history of the fluke. It is well known that sheep do not rot on salt marshes; no matter how wet they may be, no rot takes place on them. But if sheep are affected with rot upon marshes which are not salt, it is then of very little use sending them to salt marshes, for you cannot in that way cure the disease. Now, what is the explanation of that fact? It is simply this. The infusorial creatures that we have been speaking so much of are creatures belonging to fresh water, and not to salt water. If, therefore, we were enabled to take a quantity of salt sufficient to render all these damp, swampy places in our meadows or pools completely salt, we should destroy the whole of these creatures, and so get rid of the cause of this affection. But we cannot do that. Some persons, being only partially informed on this subject, have been talking of late of strewing salt over the meadows, and letting the sheep go upon them. That would be of no advantage, for you could not use the quantity necessary for the purpose without destroying the whole vegetation upon the meadows; anything short of that would be positively of no benefit whatever to the sheep. Now, bearing in mind the transformations of the fluke — bearing in mind the fact which I have mentioned, that the last change takes place in the stomach, and not in the liver; and the other fact, that salt is destructive of these infusoria, as we may call them—you will see that if you convey salt in sufficient quantity into the stomach, you may destroy them there before they undergo the last change, and then as flukes find their way into the biliary ducts. Thus, if the last metamorphosis is prevented, you get rid of the cause. I am therefore bold enough to say—not that I

depend entirely upon salt, because I shall have a word to say in regard to something else; but that I do believe that rot may be prevented to a very considerable extent, and I further believe that we may save, even in our worst years of rot, a great number of animals. What would be the means by which I should prevent the disease? I must bear in mind all the facts of the case. I must bear in mind the influence of excess of moisture with an elevated temperature. When is the dangerous period to sheep? As you approach towards midsummer. Now, if that be the dangerous period to the sheep, for the reasons we have stated, we must prevent the disease then; then that is the time to strike at its root. Instead of grumbling about our losses in the winter months, we ought to have taken measures for preventing them during the summer. Now, what have we had in the past season? We have had a very wet summer. I happen to be an unfortunate farmer—unfortunate, I say, because, like many others, I have not had a very profitable return this year. I had a number of sheep, and foresaw what was coming. I said to some of my neighbours, "We shall have a great deal of rot this year;" and I thought I would attempt, if I could so far as my own sheep were concerned, to save them. What did I do? The sheep were on wet meadows up to the fetlock joints nearly every day, and nobody could avoid it. But at midsummer I began to feed the lambs and ewes with corn —nitrogenized food—giving them with every meal a small quantity of salt. I continued the plan during the whole summer and autumn, and I have the satisfaction of saying that I do not believe at the present time I have one of those sheep affected by rot. I kept killing them week by week, to watch their progress. And here I may incidentally observe that long-continued wet weather is very prejudicial to sheep in another way. I refer now to the so-called water-rot. What was the state of the liver of these animals at midsummer? There were no flukes or anything of the kind in it, but the liver was streaked with white lines here and there, and generally pallid. This arose from the want of condensed nitrogenized food. The bile-cells were blanched; the liver had become structurally diseased, and, as such, was a good nidus for the entozoa to inhabit. Not only, however, did this simple treatment prevent the entozoa, but it brought about a healthy state of the liver, for in course of a month or two I found that the organ resumed its natural colour and consistence. I again say that if we commence at midsummer, and continue the treatment through the entire dangerous period of a wet season, we may do a great deal in the prevention of the disease.

And I may go further, and say that even on farms where we have what are called rotting pastures on which the sheep are placed, the animals might be preserved to a very considerable extent simply by giving nitrogenized food and salt, to destroy these creatures within the stomach, and prevent their final change; alternating with the salt a tonic and invigorating agent, such as sulphate of iron. I do not depend on the salt alone, far from it; but it is a valuable agent, and its value depends more upon putting the infusorial creatures and young flukes into salt water, as it were, in the stomach, than anything else. This is the course I recommend. You have to look to the condition of the liver in a wet season; you have to look to the necessity of laying the foundation for a good quality of blood, by giving the animals nitrogenized food, and throwing sulphate of iron into the organism. Every practical pathologist, human or veterinary, knows very well that if you have an anæmiated or bloodless state of the system—if there is a deficiency of the red cells, upon which the invigorating properties of the blood depend, those cells will rapidly multiply, and the blood regain its proper colour by the use of iron. This is the reason why sulphate of iron should be employed. It should be given in fine powder, about twice or thrice a week, and in doses of about half a drachm a day; not, however, that a larger quantity would be prejudicial. The sheep should be divided into small lots; and if you have about a score feeding in one trough, there should be ten drachms of sulphate of iron mixed with the food for the day; and then, if one should get a little more, and another not quite so much, it will be of very little importance; alternately with the sulphate of iron we must also employ salt. There are matters of detail which, of course, every individual farmer must carry out for himself; but if he will adopt the leading principles that I have attempted to lay down this morning, although in a very imperfect manner, he will save a considerable number of his sheep from falling a sacrifice to the affection which is commonly designated "rot."

FACTS AND FALLACIES CONNECTED WITH THE RESEARCH FOR ARSENIC AND ANTIMONY; WITH SUGGESTIONS FOR A METHOD OF SEPARATING THESE POISONS FROM ORGANIC MATTER.

By Alfred S. Taylor, M.D., F.R.S.

(*Continued from p.* 415.)

Distillation Process for Arsenic.

The plan which, after many experiments, I feel justified in recommending for the separation and detection of arsenic in liquids and solids, whether organic or inorganic, is based, 1st, on the ready conversion of arsenic into *chloride;* 2d, the transformation of this compound to *hydride* by Marsh's process; 3d, the production of metallic arsenic, of arsenious and arsenic acids from the hydride; and 4th, testing the products. When once obtained in the state of chloride the presence of arsenic admits of easy verification, either by resorting to the process of Reinsch or that of Marsh. The quantity of arsenic present may also be determined either in this or a subsequent stage.

First stage—*conversion to Chloride.*—If the substance to be examined for arsenic is *solid,* it should be reduced to a fine powder, or cut into small pieces. In the analysis of the liver, spleen, or other soft organs, it will be proper to cut these into small portions, and to dry them either by a current of air or by the aid of a water-bath, so as to deprive them as much as possible of water. The complete elimination of the arsenic depends greatly on the perfect desiccation of the substance and the concentration of the acid, as the following experiments will show:

One grain of white arsenic was mixed with two drachms of pure hydrochloric acid, in which it was readily dissolved, and the solution was distilled to dryness. The acid liquid in the receiver measured three drachms, one drachm of water having been placed in it for the purpose of condensing the acid vapours. Arsenic was abundantly detected in the distillate by all the usual processes. The washings of the retort (for there was no apparent residue) gave a mere trace of arsenic, calculated not to exceed the 1-4000th part of a grain. When a similar quantity of arsenic was boiled with the diluted acid (1 to 8), it was not dissolved; and when distilled, the greater part was left in the retort. When the

experiments were repeated in porcelain capsules, there was no residue from the strong acid, but an abundant residue from the diluted acid.

Nearly all the soft organs, including the muscles, contain from 60 to 70 per cent. of water; and this furnishes a great obstacle to the entire separation of the arsenic by distillation. In the analysis of liquids, such as the blood, urine, or vomited matters, it is desirable to bring them to dryness by a water-bath before treating them with hydrochloric acid.

The substance, whatever may be its nature, having been brought to perfect dryness, is covered with concentrated hydrochloric acid, the purity of which has been previously tested by operating on an equal quantity, according to a method to be presently explained (p. 540). The quantity of pure hydrochloric acid used must depend on the quantity of material for analysis. It should be sufficient to break up, dissolve, or mix freely with the whole of the solid. The mixture should be made in a retort or flask fitted with a condensing tube, and then gradually heated by a sand-bath, until the acid liquid begins to pass over. The retort or flask may be connected with a receiver closely fitting to it, and holding a small quantity of distilled water. The water in the receiver should be just sufficient to condense and fix the acid vapours. The receiver, as well as condensing-tube, should be kept cool by wetting its surface with cold water or otherwise. The perfect condensation of the distilled liquid is ensured by this arrangement.*

The distillation may be carried to dryness on a sand-bath, or nearly so; and it may be sometimes advisable, in order to ensure the distillation of the whole of the arsenic as chloride, to add to the residue in the retort another portion of pure and concentrated hydrochloric acid, and again distil to dryness. I have, however, found that portions of dried liver and stomach give up every trace of arsenic by one distillation, when a sufficient quantity of hydrochloric acid has

* As a substitute for a retort when the quantity of matter for distillation is not large, I have found a most convenient form of apparatus, to be a globular flask of thin glass, with a short neck. Into this is fitted a tube of hard glass, from two to three feet in length, and one quarter of an inch in the bore. It should just pass through the cork in the neck of the flask, and this end of the tube should be bevelled off obliquely to a point, in order to prevent any of the liquid in the flask from being carried over. The tube should be covered spirally with layers of blotting-paper (kept constantly wetted), for at least two feet of its length, and should terminate in a Florence flask, to which it is fitted by a cork. This flask should be kept cool by immersion in a basin of water, or by covering its surface with wet tow.

been used in the first instance, and the distillation has been slowly conducted by a regulated sand-bath heat.

Second stage—*conversion of Chloride to Hydride.*—The liquid in the receiver is a solution of chloride of arsenic in water, or, as some believe, a mixture of hydrochloric and arsenious acids. It is in general colourless, when care has been taken; or if slightly coloured yellow, this will not interfere with the subsequent steps of the analysis. It contains no amount of organic matter which can lead to frothing in Marsh's tube, or to any deceptive results from the combustion of the gas produced. There is no loss by volatility at ordinary temperature, since the water retains the chloride of arsenic; but at the same time it is proper either to proceed immediately with the examination of it, or to place it in a stoppered bottle to prevent loss by evaporation of the distillate. The arsenical liquid in this state may be preserved for examination at any future period.

If a quantitative analysis is required in this stage from a given weight of the organic solid or liquid, one third of this distilled liquid may be reserved for the purpose. Of the remaining two thirds, a small portion may be diluted with four or five parts of distilled water and boiled. When boiling, a piece of bright copper foil (free from arsenic) should be introduced. If there is chloride of arsenic in the liquid, even up to the 1-4000th of a grain, its presence will be indicated by a change of colour, and by the deposit of a dark metallic film on the copper. If the liquid should be too much diluted for this purpose, it may be concentrated on the polished copper, and the deposit will after a time be apparent. If the quantity of arsenic present is believed to be very small, the surface of copper introduced should be proportionably small.

The larger portion of the distilled liquid should now be introduced into a bottle or flask, the capacity of which must be regulated by the quantity of acid liquid to be examined. To the neck of this flask there should be fitted, by means of a soft cork, a hard glass tube of about a quarter of an inch in the bore. After rising an inch or two, it should be bent at a right angle, and carried horizontally for the length of a foot. It should then be bent at another right angle, for the convenience of dipping into liquids contained in glasses or tubes. The horizontal portion of the tube should be drawn out in three different places, until the diameter of the tube does not exceed the tenth of an inch. This allows of the collection of metallic deposits in a concentrated form, and on surfaces in which they may be easily examined and tested.

This arrangement was, it appears, first proposed and employed by M. Lassaigne, in 1842.* Care should be taken to employ glass free from lead. The tube should resist a red heat without blackening.

A piece of pure zinc is now dropped into the bottle containing the distillate. If the action of the acid is too violent, a little water may be added, and the cork then fitted. Two test glasses or tubes, the one containing about a drachm of moderately strong solution of nitrate of silver, the other about the same quantity of the strongest nitric acid containing nitrous acid (sp. gr. 1·522), should be at hand to receive the gas from the bent tube as it escapes.

The solution of *nitrate of silver* furnishes an excellent medium for detecting minute traces of arsenic. So soon as the air from the flask is removed, and the hydride of arsenic passes over, the solution of silver is blackened. This blackening is owing to the production of metallic silver which is precipitated with a trace of arsenic. The arsenic takes the oxygen of the silver salt and passes to the state of *arsenious acid*—the nitric acid being set free in the liquid. The solution of silver may not show any blackening or darkening from the passage of the gas even after half an hour. Under these circumstances, no arsenic is present. We have in this method, therefore, the best means for detecting any arsenical impurity in the hydrochloric and sulphuric acid or zinc that we employ; and before using these in any analysis, it would be desirable thus to test them by this process. Unless we obtain negative results by passing the hydrogen produced into nitrate of silver, we cannot safely employ them.†

Third stage—*production of Arsenic and its oxygen compounds.*—The silver solution completely arrests the gas and oxidizes the arsenic. When the current has passed through it for some time, a strong heat may be applied to the horizontal portion of the conducting-tube about one quarter of an inch before each contracted space, beginning with that which is nearest to the flask evolving the gas. The hydride is decomposed at a full red heat, and metallic arsenic is deposited in a dark ring or crust on the interior of the glass, at a short distance from the spot which is heated. The appearance of

* 'Manuel Pratique de l'Appareil de Marsh,' par Chevallier, 1843, p. 119.

† It not unfrequently happens, even in testing pure zinc, as well as pure acids (hydrochloric and sulphuric), by this method, that although, after a quarter of an hour, the solution of silver may show no darkening, a black ring will be formed on the inside of the extremity of the tube which dips into the solution. This is precipitated silver, probably caused by the presence of minute traces of arsenic or phosphorus.

this will be brown, black, or strongly metallic, according to the quantity of arsenic present, and the time during which the heat is continued. Under these circumstances, hydrogen only escapes; but as the end of the tube is still immersed in the solution of nitrate of silver, no arsenic is lost. The operator may, at his pleasure, thus procure three separate metallic deposits on the three contracted portions of the horizontal tube. Having prepared another right-angled tube with a cork to fit the flask, this should be rapidly substituted for that in which the deposits are collected. More zinc may be added to the flask, if necessary, and the gas evolved should be allowed to exhaust itself in strong *nitric acid*. Not a trace of gas escapes through this strong acid:—the whole of the arsenic is arrested and converted to arsenic acid, which may be obtained by evaporating the nitric acid on a sand-bath.

Fourth stage—*testing the products*.—By the methods suggested, the hydride furnishes, 1st, as a result of decomposition by heat, a deposit or mirror of *metallic arsenic;* 2d, as a result of the action of nitrate of silver, *arsenious acid;* 3d, as a result of the action of nitric acid, *arsenic acid*.

1st. The conducting-tube should be divided into as many parts as there are metallic deposits. The contracted portion of the tube being sealed, the metallic deposit may be gently heated, and if it be due to arsenic a ring of octahedral crystals of arsenious acid, small but well-defined under the microscope, will be procured. If there are several metallic deposits, these may be broken up and heated in a wider tube. By this means sufficient arsenious acid may be procured to yield a solution of arsenic, which will give the usual yellow and green-coloured precipitates with the ammonio-nitrate of silver and the ammonio-sulphate of copper. There is, however, ample corroboration in the subsequent stages, without resorting to the liquid tests. 2d. *Arsenious acid* is obtained in solution by filtering the decomposed nitrate of silver into which the gas has been passed, and by precipitating the filtered liquid with a slight excess of pure hydrochloric acid, so as effectually to remove the undecomposed silver as chloride. When the precipitated chloride has completely subsided, the liquid may be again filtered until it is perfectly clear and free from any silver salt. In this state a current of washed sulphuretted hydrogen gas should be passed into it, when the well-known yellow sulphide of arsenic will be precipitated in greater or less quantity, according to the quantity of arsenic present. Independently of the colour of the precipitate, which distinguishes sulphide of arsenic from all metals excepting cadmium, it will be

found that it is dissolved by ammonia, and not dissolved by hydrochloric acid in the cold.* 3d. *Arsenic acid* is a product of the action of strong nitric acid on the hydride. It may be procured by evaporating to dryness on a sand-bath, in a small porcelain capsule, the nitric acid after it has been saturated by the current of arseniuretted hydrogen gas passed through it. When quite *dry*, it appears as a white residue, if the nitric acid was pure. It is fixed at the ordinary heat of a sand-bath, and, after exposure to air for a short time, it will become moist and deliquescent. It should be completely dried before any test is added to it, because the presence of traces of nitric acid may interfere with the action of the test. If not in a deliquescent state as the result of exposure, a small quantity of distilled water should be added, to detach the acid from the capsule. One or two drops of a strong solution of nitrate of silver should now be added, and, if the residue is arsenic acid, a brick-red precipitate of arseniate of silver will make itself visible. In place of the nitrate, a strong solution of ammonio-nitrate of silver may be employed, provided the ammonia is not in excess. This has the advantage of neutralizing the solvent effect of any nitric acid which may be adhering to the solid arsenic acid, and it reveals the presence of small quantities better than the nitrate.

With these combined results, it is conclusively proved that arsenic must have been present in the substance analysed. We have here, in the production of metallic arsenic, and of its two acid compounds with oxygen, as well as in the conversion of these to sulphide of arsenic and arseniate of silver, the maximum of evidence which an analyst could desire. Beyond this it appears superfluous to carry the chemical proof. The combustion of the gas, as suggested by Marsh, with the collection of deposits from the flame, while it necessarily entails much loss, is not required in any stage. The decomposition of the hydride by a red heat in a close tube answers all the purposes of combustion, without the risk of loss from the frequent opening of a stop-cock. A larger quantity of metallic arsenic can be thus obtained in one operation; and any gas which escapes decomposition is arrested and decomposed by the nitrate of silver or nitric acid.

The quantity of arsenic present in the distillate may be so

* The sulphide of cadmium is affected in a contrary manner by these reagents. It is insoluble in ammonia, but soluble in hydrochloric acid. Cadmium could not be present: it cannot be distilled as chloride, and it does not combine with hydrogen to form a hydride.

small as only slightly to darken a solution of nitrate of silver, and to yield a hair-brown film of metallic arsenic by heating the tube. In cases in which the quantity of arsenic is very small, it will be convenient to extemporise a Marsh's apparatus, by fitting to a test-tube a cork traversed by a funnel-tube and a short exit-piece bent at right angles. This should be connected with a piece of tubing containing broken chloride of calcium, so that the gas as it passes may be dried. A tube, drawn out for about two thirds of its length to almost a capillary bore, should be fitted by a cork to the other end of the chloride-of-calcium tube. Zinc is placed in the apparatus, the funnel-tube is then fitted, and the distillate, suspected to contain traces of arsenic, is poured through the funnel. The gas is tested by holding filtering-paper, wetted with a solution of nitrate of silver at the capillary aperture of the tube. If arsenic is present, a minute black spot appears. This may, however, be due to antimony. If owing to the presence of sulphur, the spot will be brown, and the gas will discolour paper moistened with a solution of acetate of lead.* The tube may now be heated red-hot within half an inch of the contracted portion, taking care that the contracted or capillary part of the tube, which is to receive the arsenic, is not overheated. A metallic deposit of arsenic is soon formed in the narrow portion of the tube. From the 1-1000th to the 1-2000th of a grain of arsenic may have its presence thus indicated.

When the quantity of arsenic is at a minimum, no other evidence than this thin metallic deposit may be obtainable. In general, however, besides the metallic deposit as a result of heat, it will be found, by passing the gas through a bent

* In all cases, it will be found convenient to dry the arseniuretted hydrogen gas by means of a chloride-of-calcium tube attached to the apparatus. A piece of lead-paper, introduced at the mouth of this tube, will effectually stop any sulphuretted hydrogen that may be produced. It may here be observed, that neither arseniuretted, antimoniuretted, nor phosphuretted hydrogen darkens a solution of acetate of lead; and it is always proper to test the gas by lead-paper applied to the open end of the conducting-tube, before passing the current into a solution of nitrate of silver. Sulphuretted hydrogen would otherwise cause thick black flakes in the solution, and might give rise to an error respecting the presence of arsenic.

In cases in which the quantity of arsenic is sufficiently large, a tube with a stop-cock may be resorted to. This gives a command over the rapidity of the current.

The zinc which has been used in one experiment is not fitted for use a second time. Some arsenic is always deposited upon it, which is evolved when hydrogen is again generated. I have substituted aluminum with hydrochloric acid as well as potash, but I have not found this new metal to present any advantages over zinc. It contains no arsenic, but much iron and carbon.

tube into nitric acid until the acid liquid in the apparatus is exhausted, a sufficient quantity of arsenic acid may be obtained, on evaporation, to admit of the application of the silver test, and the production thereby of the red arseniate of silver.

Whether the arseniuretted hydrogen is coming over, or has ceased to come over, is a fact which can always be determined by the application of filtering-paper, wetted with the nitrate of silver, to the open end of the tube from which the gas is issuing.

Various experiments were tried in order to determine whether other reagents might be used for oxidizing arseniuretted hydrogen and producing arsenic acid, in a form for testing. Solutions of chlorine and of chloride of lime in water were found to stop it only partially. Nearly one half of the gas escaped decomposition. On evaporating the liquids to dryness, some time after arseniuretted hydrogen had been passed into them, arsenic acid was readily proved to be present in the residues, by the addition of nitrate of silver. Bromine acts in a similar manner. Iodine has no effect. Solutions of the chlorides of gold, platina, and mercury, of permanganate of potash, of sulphate of copper, and iodic acid, were successively used for receiving the arseniuretted hydrogen. The gas underwent decomposition in all of these solutions, but only to a partial extent. Among those above enumerated, the solution of chloride of mercury, as stated by Berzelius more than thirty years ago,* appeared to have the greatest power in arresting and fixing the arsenic. The results of these experiments were, that no liquids so completely oxidized arseniuretted hydrogen, without loss, as nitric acid and a strong solution of nitrate of silver. When the current was properly managed, not a trace of the gas escaped.

Quantitative analysis.—If the quantity of arsenic present is moderately large, it may be determined in the first stage, viz., by adding to the distillate containing chloride of arsenic a sufficient quantity of a solution of chloride of gold, and warming the mixture. After some time the gold is entirely reduced and precipitated. Its weight will enable the operator to calculate the proportion of arsenic present.† If there is a ponderable quantity of arsenic present, the distillate, or an aliquot part of it, should be diluted, placed, with metallic zinc, in the apparatus described, and the gas produced, entirely transmitted into strong-nitrico-nitrous acid. When all

* 'Traité de Chimie,' 1829, tome ii, p. 437.

† See Will's 'Guide de l'Analyse Chimique,' 1858, p. 66.

the arsenic has come over, the acid should be evaporated in a light-balanced capsule on a sand-bath, and the weight of arsenic may be known by the increase. If converted to arseniate of silver, and the quantity is sufficient for collection on a filter, this precipitate may be dried and weighed. Every 100 parts of the arseniate of silver are equivalent to 21·38 parts of arsenious acid. In reference to imponderable quantities, the only method of estimating the quantity of arsenic is the comparing of the amount of metallic deposit obtained by heating the current of arseniuretted hydrogen with the amount obtained from a weighed quantity of arsenic, dissolved in water, and treated in a similar manner.

For determining the quantity in the tissues, a known weight,—one hundred grains of dry liver, may be distilled:—the chloride obtained converted entirely to hydride, and this, decomposed by passing the gas into nitric acid until the arsenic is exhausted. The residue left by evaporation will be arsenic acid, of which 100 parts correspond to 65·2 of arsenious acid.

Objections.—This process appears to be singularly free from the objections to which those of Marsh and Reinsch are exposed. In the first stage, if properly conducted, arsenic is separated from all metals excepting antimony and bismuth, and from all metalloids excepting sulphur, phosphorus, and that rare substance, selenium. Of all the metals known, fourteen produce volatile chlorides; but with the exception of arsenic, antimony, and bismuth, these are deposited on cooling, in a solid condition. Most of these are chlorides of the rarer metals, which are not likely to be met with in any analysis of a medico-legal nature. The chloride of arsenic is volatile, and is easily distilled with aqueous vapour: the chlorides of antimony and bismuth require a much higher temperature for volatilization; and unless the material is distilled to dryness and subsequently heated, they are not likely to be found in the acid distillate.*

In the second stage, antimony comes over with hydrogen, like arsenic. The only other metals which combine with hydrogen to form a gas are potassium, tellurium, and zinc; and among the metalloids, sulphur, selenium, phosphorus, and carbon. When heat is applied to the current of gas, the

* Ten grains of subnitrate of bismuth were distilled by a sand-bath with two drachms of pure hydrochloric acid. A small piece of polished copper boiled in the distillate, diluted, was only faintly whitened. Ten grains of protochloride of tin were distilled with two drachms of pure hydrochloric acid. The acid liquid produced no change on metallic copper by Reinsch's process.

only substance deposited in a form to be mistaken for arsenic is *antimony*. The other substances present no difficulty whatever. Their colour, and their other physical properties, as well as the absence of any crystalline sublimate on heating to about 400° the deposit obtained by heat, at once distinguishes them from arsenic. The deposit produced by heat from the hydrogen-compound of antimony, is blacker than that procured from arsenic; and if air is not entirely excluded at the time of heating the tube, some oxide, of a grayish-white colour, is at the same time deposited. The antimonial deposit is known from that of arsenic by its requiring a high temperature for sublimation, and by its not producing octahedral crystals. It is simply converted to a white amorphous oxide, at a higher temperature than the arsenical deposit requires for its sublimation. If a sufficient quantity of oxide is obtained in the form of a sublimate, this may be dissolved in a solution of pure tartaric acid, and the antimony precipitated from this solution, as an orange-red sulphide, by a washed current of sulphuretted hydrogen gas. The crystalline sublimate from arsenic can be driven by heat to various parts of the tube; the amorphous deposit of antimony is fixed. Finally, these metals are entirely separated and distinguished from each other in the third stage. The antimoniuretted hydrogen received into strong nitric acid is converted into antimonious or antimonic acid, which is left as a white, non-deliquescent residue by evaporation of the acid. This residue is quite insoluble in water and alcohol; and thus any arsenic acid mixed with it may be separated from it by digesting the residue in watery alcohol, and filtering the liquid. If tested by nitrate of silver, in the capsule in which it is collected, no red-coloured precipitate is produced, but on adding a drop of ammonia, black antimonide of silver is immediately formed. The passage of antimoniuretted hydrogen into a solution of nitrate of silver causes the precipitation of the whole of the silver as a black antimonide. The filtrate precipitated by hydrochloric acid gives no precipitate with a current of sulphuretted hydrogen. By either of these methods, therefore, arsenic and antimony are discovered in traces, are known from each other, and can be separated from each other.

Arsenic acid and the alkaline arseniates, as well as the sulphide of arsenic, are not easily obtained in the form of chloride of arsenic by the distillation process. Some portion passes over as chloride of arsenic, but much remains unchanged in the retort. Arsenious acid and the arsenites, soluble and insoluble in water, are most readily obtained in

the form of chloride. These compounds chiefly concern the medical jurist. To one case of poisoning by arsenic acid or the sulphide, there will be at least one hundred cases of poisoning by arsenious acid. Should it be required to distil arsenic acid or its compounds, it will be advisable to convert it to arsenious acid by a current of sulphurous acid, or by the addition of bisulphite of soda. Sulphide of arsenic may be similarly transformed, by being first treated with nitro-hydrochloric acid.

Applications of the process.—Including the analyses for arsenic in copper already referred to (p. 413), I have applied this process during the last year in probably not less than seventy instances. In cases in which negative results were obtained from the distillate, no arsenic was found by Reinsch's process either in the distillate or in the acid residue in the receiver. The process presents this great advantage to the toxicologist, it may be safely adopted without interfering with the research for other poisons. With the exception of mere traces of antimony and bismuth, that pass by distillation, all other metals remain in the residue after distillation; and with respect to these two metals, the greater proportion remains behind. Hence, after separating arsenic, the residue may be examined for antimony, mercury, copper, lead, and other metallic poisons, by the ordinary processes. On the other hand, if the presence of any volatile poison, such as alcohol, prussic acid, ether, or chloroform, is suspected, a water-bath distillation, to separate any of these liquids, may be resorted to, before commencing the research for arsenic. A portion of the residue may in all cases be reserved for the research for organic alkaloids.

The subjoined experiments were purposely resorted to, in order to test the efficacy of the process.

1. *The stomach.*—The contents and part of the coats of the stomach of a person had been examined for arsenic by Reinsch's process, and no arsenic was found. The remainder of the stomach had been exposed for some months, and was in a dry state. A solution containing three eighths of a grain of arsenic was poured over the surface; in this state it remained exposed five months longer. One third of it was then cut up and distilled with two ounces of pure hydrochloric acid, in the manner already described (p. 537). The distillate was acid, and nearly colourless. It yielded arsenic readily by Reinsch's process, as well as metallic arsenic from arseniuretted hydrogen,—arsenious acid by the use of nitrate of silver, and arsenic acid by the use of nitric acid. The dry residue in the retort was tested by Reinsch's process. It

contained no arsenic. In this experiment, the quantity of arsenic operated on in the substance of the stomach could not have exceeded one eighth part of a grain.

2. *The liver.*—Sixty grains of the dried liver of a person who died about five years since from the effects of arsenic, were broken up and distilled with hydrochloric acid. A slightly coloured, offensive liquid was obtained in the receiver, which yielded arsenic readily by the methods described, in all the forms in which arsenic admits of recognition. The residue in the retort contained no arsenic.

3. *A poisoned lozenge.*—This was an ordinary sugar-lozenge, poisoned with a grain of arsenic. It was distilled with hydrochloric acid. Arsenic was abundantly procured in the distillate, which was of a yellowish-brown colour, arising from the presence of some organic matter. This was not, however, in sufficient quantity to interfere with the subsequent stages of the analysis. The sugar darkened considerably in the retort, and gave much froth. The process of distillation was found to be more troublesome with saccharine than with other kinds of organic matter. A trace of arsenic was detected in the residue in the retort, showing that in this instance, by one distillation, the arsenic had not been entirely separated. The quantity, was, however, so small that it was not considered necessary to resort to a second distillation.

4. *Arsenical paper-hangings.*—About half a square inch of a green paper, coated with the aceto-arsenite of copper, gave, on distillation with hydrochloric acid, a clear acid distillate, from which arsenic was readily procured in its usual forms.

(*To be continued.*)

SALE OF DISEASED MEAT.

We extract the following from Dr. Letherby's report on the sanitary condition of the City of London for the quarter ending the 24th of June last. It will be seen that even now a considerable amount of unwholesome meat finds its way to the market, to the detriment of the health of the poorer classes, but it is gratifying to find that, by the vigilance of the inspectors, the nefarious practice has received a salutary check.

After referring to the state of the public health, and the various causes, more especially the supply of water to the inhabitants of the city, which exercise an important influence over it, Dr. Letherby goes on to remark that—

"The markets and slaughter-houses have also been duly inspected, and the officers have seized 26,013 lb., or nearly 26 tons of meat, and 690 head of game and poultry, as unfit for human food.

"It consisted of 154 sheep, 15 calves, 21 pigs, 190 quarters of beef, 209 joints of meat, 224 pigeons, 210 fowls, 53 wild fowls, 56 ducks, 36 rabbits, 23 hares and leverets, 20 geese, 59 ruffs, and 4 plovers. All the game and poultry was putrid, but of the meat 15352 lb. were diseased, 4120 lb. were putrid, and 6541 lb. were from animals that had died from natural causes.

"Most of the meat was seized in Newgate market by Mr. Fisher and Mr. Newman, and the game and poultry in Leadenhall by Mr. Davidson. It is but right to state that the salesmen have given great assistance to the officers in the execution of this part of their duties by informing them of the arrival of the meat at the market, and by giving up the names and addresses of the senders.

"In this way they had been able to institute proceedings against the most flagrant offenders, and during the quarter three persons have been convicted at the Old Bailey of the offence of sending diseased meat to the city markets. In two cases the punishment was imprisonment, and in the third a penalty of £20. These proceedings have had the effect of checking the supply of bad meat to the markets, for the total amount seized during the quarter is not half so much as that of the preceding quarter, and during the last month the quantity has fallen off very considerably.

"Arrangements have been entered into with Mr. Ford, of Belle Isle, for the destruction of the meat thus seized; and to ensure its not being used as food, a chemical treatment is about to be adopted before the meat leaves the custody of the inspectors.

"With respect to the Act for preventing the sale of adulterated food, only six applications have been made during the quarter for the analysis of articles suspected to be adulterated—two of these were for beer, one for bread, one for milk, and one for cooked ham. Both of the samples of beer were of inferior quality, and one was adulterated with a sweet material like liquorice; the bread, also, was of inferior flour, but the other things were sound."

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Journal des Vétérinaires du Midi, June, 1861.

LUXATION OF THE PATELLA TOWARDS THE INNER SIDE OF THE LIMB.

By M. Perarnaud, V.S., Military Train.

The subject of this affection was a mare of a sanguineo-nervous temperament, belonging to General Lasnon. She was in an advanced stage of gestation. The animal could not use the left hind leg, which was extended backwards; the patella could not be felt at its usual place, where, on the contrary, there was a deep depression; when made to walk, which was very painful, the animal dragged the limb behind her, at the same time carrying the head very low, so as to bring the weight on the fore legs. On examining the inside of the stifle the animal evinced great pain, though there was little or no sensation on the outside. Not being able to find the patella on the outside, the author thought, for the moment, it must be concealed in the mass of muscles. He was much puzzled in making his diagnosis. It could not be cramp, as the patella in these cases is forced to the outside. He examined the coxo-femoral articulation, but nothing abnormal could be detected there. On further examination, a hard body was discovered on the inside of the stifle, which on pressure caused the animal great pain; this was the patella. How to explain this abnormal displacement over the internal border of the astragalus, which is so much more elevated on the inside than on the out, could only be by admitting a malformation of the bone, a greater relaxation of the ligaments of the patella itself, and a greater rigidity of the extensor muscles, with a corresponding weakness of the flexors, or a violent effort in slipping, to which the advanced state of gestation might have contributed. The reduction was not made without difficulty, and required three strong men besides the author, one to flex the leg, another to support the stifle, and the third to push the animal slightly to the right

while the author slipped the patella over the rim of the astragalus into its proper place, producing at the same time a peculiar noise. This effected, the leg assumed its natural position. A strong reaction took place, for which restricted diet was ordered; ammoniacal frictions were also applied to the parts, in order to produce tumefaction; nothing untoward followed, and shortly afterwards no trace of the accident could be perceived.

CEREBRAL APOPLEXY IN A HORSE.

By M. Pigeaire, V.S., Marsillargues.

The subject of this case was an eight-year-old gelding, which had not been out of the stable on that day. He was paralysed on one side, and to keep on his legs was obliged to rest the left side against the wall. He was in a state of stupor, and perfectly immobile; the head went to and fro like the pendulum of a clock, but always more in the direction of the left side; the veins of the face were congested, the mucous membranes injected, the eye bloodshot, the sight and hearing were lost, the nostrils dilated, the respiration slow, and the pulse hard, intermitting, and quick. From these symptoms the author thought he might diagnosticate cerebral apoplexy. The treatment consisted of abstraction of twelve pounds of blood from the jugular vein, cold-water douches to the head; and at 10 o'clock at night fifteen pounds more were taken. There was a great amelioration in the state of the patient, but the douches were ordered to be continued; cooling drinks were also given. The next day, the symptoms of paralysis having disappeared, the patient began to feed: the senses of hearing and sight had also returned. Bran mashes were now ordered, and the douches to be continued; blisters were applied to the thighs. On the third day, as the animal seemed to be very hungry, three pounds of hay, with half a pound of straw, were ordered. On the fourth day all unfavorable symptoms had disappeared, and the animal was kept on low diet until the eighth day, after which he was put to his regular work.

Annales de Médecine Vétérinaire, Bruxelles, June, 1861.

HYDROPERICARDITIS COMPLICATED WITH HYDROTHORAX.

(*From the Clinic of the Hospital by* Professor DELWART.)

Report of M. FRANCOIS, Veterinary Student.

THE subject of this case was a milch cow, about nine years old, in good condition. There was loss of appetite and milk, she was constipated, and a considerable enlargement existed at the lower pectoral region; these phenomena had been perceived three or four days previous to her being admitted. The symptoms at this time were, countenance dejected, appetite capricious, temperature of the body low, nose dry, respiration irregular, pulse quick and small, mucous membranes pale, serous infiltration extended along the course of the trachea and under the jaw, in a similar manner as in cases of cachexia aquosus in the same animal, which the country people call bouteille (bottle). The jugular veins were engorged, and in appearance like two cords distended under the skin along the neck. These symptoms sufficiently indicated that the chest was the seat of the disorder. On exploring this cavity, the plessimeter denoted a dull sound in the inferior fourth on the right side, and in the inferior third on the left; in the other part the sound was slightly increased. The plessimeter enabled the reporter of this case to draw a distinct line of demarcation between these parts. Auscultation furnished similar results, viz., absence of respiratory murmur at the points where the sound was dull, and increased tubular respiration in the same parts, while the vesicular murmur was slightly exaggerated in the other parts of the lungs. On applying the hand to the region of the heart, instead of the normal shock against the side, only a tremor could be felt; the ear detected but a dull bruit, as if from the depth of the chest, and as if produced by the motion of some liquid. This bruit was very like that described by M. Schele in cases of traumatic pericarditis. The diagnosis of hydropericarditis, complicated with more or less effusion in the chest being established, the prognosis was not difficult. The owner's consent being obtained, the animal was destroyed. The necroscopic appearances were as follows:—The pleural sac contained about eight litres of yellowish serum, some false membranes adhering to the diaphragm by one end, while the other floated in the serum. The pericardium was enormously distended, and adhered to the diaphragm; an incision being made in this sac, about

six litres of purulent fluid, of an offensive odour, escaped from it, in which were found a great quantity of fibrinous clots; the heart was covered with a thick layer of plastic exudation, the same existed on the inside of the pericardium, which had a mammilated aspect; two strong, abnormal, adherent bands attached the heart to the pericardium. One was flat, about fifteen centimeters in length, seven in breadth, and three in thickness, stretching from one side to the other; the second was of a cylindrical form, and descended vertically from the apex of the heart. These bands, which fixed the heart to the pericardium and the fluid contained in it, explain sufficiently the absence of the shock of the heart against the side.

FRACTURE OF THE CRANIUM IN A FOAL.

By M. Foelen, V.S., St. Trond.

A foal, two months old, received a kick from a horse on the head, by which it was stunned. It remained motionless, extended on the litter, for two hours, after which, on trying to get up, it tumbled about, and always on the side of the blow. It was therefore necessary to keep it lying down to prevent its falling, and it also appeared to have lost the power of distinguishing surrounding objects. A large swelling was perceived under the right ear, where it was found that a piece of bone, the size of five centimes, was driven in. The attitude of the foal showed that this pressed on the brain, and that an operation was necessary; to accomplish this the foal was held by assistants, and an incision of the shape of a T was made by the author in the centre of the swelling; the parts being reflected back, the depressed bone was raised to its level by a strong hook carefully introduced under the edge; the closing of the skin by twisted sutures concluded the operation. Cold water was applied to the head. In about a quarter of an hour after the operation the foal got up, walked a few steps, and fell down again. As he evinced no appetite, a little milk was forced down his throat. The next morning it got up and walked away, but still turning to the right; it drank spontaneously, but was only allowed some milk, with an addition of water and a little meal. The few first days after the operation the sight was still imperfect, but improved daily. The cold lotions were continued for a week. The foal improved greatly up to the fifteenth day after the operation, at which time a stiffness in the limbs was perceived, to which

paralysis soon succeeded. Apprised of this change, the author was soon on the spot, when he found the patient extended on the litter, exhibiting from time to time convulsive contractions of the legs; the eyes were pale, and turned in their orbits. When the mouth was opened it had no power of closing it again, and everything indicated a speedy death. Thinking that there either was effusion of blood or an abscess on the brain, the author determined to remove the whole of the detached bone, in order to give vent to whatever fluid might exist on the brain. The fractured bone was slightly raised by a small lever, and seized with the dissecting forceps and removed, when there escaped from under it a quantity of pus, which continued to flow for some time. On probing the parts the author fancied that it communicated with the right ventricle, a portion of the brain being loose near the fracture. A piece of fine linen was now laid over the exposed brain, and the opening closed by suture as before; the whole of the cranium was also covered with a piece of linen, which was kept constantly wet. The foal remained extended on the litter. The owner would have sacrificed it, but the author begged for a respite, and the treatment was continued. On his next visit there was a considerable prolapsus of the substance of the brain through the opening; this substance had a grayish, sanguineous appearance. The author abstained from reducing it, but left the wound to cicatrize. It was now dressed twice a day with tincture of aloes, applied with a soft feather. The substance of the brain soon became covered with healthy granulations of a rose colour, the edges of the bones exfoliated, and as the granulations increased, the hernia diminished. At the beginning of June, nearly two months after the accident, the wound was entirely cicatrized, the sight restored, and a few months after the foal, having recovered its condition and health, was sold by the proprietor, who, some time after, meeting the buyer, was informed by him that it was growing into a fine horse.

ON EGYPTIACUM IN OPEN JOINTS.

By the Same.

On the 19th of November, 1860, a mare, seven years old, had caught her right fore foot in the chain of the head-stall, and in her struggles to free herself nearly tore her foot off; it only hung by the skin and the ligaments on outside; on inside there was a deep, lacerated wound, from which synovia

flowed copiously. On closer examination it was found that the lateral cartilage was torn from its subjacent adhesions, and only held by a small portion to the os pedis; underneath it there was a rent in the capsule of the articulation of the foot, large enough to introduce the forefinger between the two last bones of the foot. The author decided on removing the cartilage, as is practised in quittor; this done, the rupture of the lateral ligaments, which was only suspected before, could be easily seen; gangrene had already commenced in some part of this lacerated wound. It was dressed twice a day with balm of opodeldoc until it assumed a healthy appearance, after which the Egyptiacum ointment so much praised by Verrier in wounds of the articulation, was applied daily on a pledget of tow, so arranged as to make part of the ointment penetrate into the wound. On the 20th of December the wound was entirely closed. The author doubts whether by any other remedy such a result could have been obtained.

Veterinary Jurisprudence.

WINCHESTER COUNTY COURT.

The usual monthly sitting of this court was held at the Castle, on Monday, August 3d, before T. GUNNER, Esq., Deputy Judge.

LANHAM *v.* SIMONDS.

SEEDY TOE.

The plaintiff was Mr. Edward Lanham, a resident of Southampton, and the defendant W. B. Simonds, Esq., of Barton Farm, Winchester. The action was brought to recover the sum of £23 18s. 6d. —loss occasioned by the resale of a chesnut gelding purchased by the plaintiff of defendant with a warranty as to soundness and to be "free from vice." Plaintiff alleged that the horse so warranted was not sound, and was not free from vice, and that he had a habit of shying.

Mr. Leigh, of Southampton, appeared for the plaintiff, and *Mr. R. W. Simonds* for defendant.

In opening the case for the plaintiff, *Mr. Leigh* stated that the result would turn upon the scientific evidence respecting the state of the horse at the time of the sale. The horse was sold for £50 by defendant to the plaintiff on the 28th March last, and delivered next day at Southampton. The unsoundness was not discovered by Mr. Lanham till the 10th May; but although he did not find it out, Mr. Gould, farrier, who shod the horse, discovered it a few days after it arrived at Southampton. The animal had what was called a "seedy toe" (which, as its name indicated, was a soft, pithy substance), and he also had corns. The horse went a little lame shortly after his arrival, but this might be the case without forming a conclusion that the animal was unsound.

Subsequently, however, Mr. Gould told the plaintiff that the horse had this seedy toe, and plaintiff wrote to the defendant informing him of the fact, who, having inquired into the matter, replied that he had no reason to suppose or suspect that the animal was unsound. The correspondence went on, and no arrangement could be made, although plaintiff offered to submit the case to arbitration. Plaintiff offered to sell the horse for £40, or to keep it on condition that defendant would refund £10 of the purchase money. This offer was likewise refused, and the animal was examined by several other persons, all of whom pronounced him to have a seedy toe. Defendant wrote to the plaintiff, saying he regretted the animal did not suit him; he had bought it of Mr. Barnes only two years ago, and had given him £120 for it. At the same time he could not admit that the animal was unsound. Notice was then sent to defendant that the horse would be sold, and it was accordingly sold by auction for £29, but the net sum received by the plaintiff was only £26 1s. 6d. This action was now brought to recover the difference. The plaintiff did not impute for a moment that Mr. Simonds had the slightest idea that the horse was unsound at the time he sold it; for the seedy toe was a disease which could not be discovered by superficial observation in its incipient state.

The evidence of Messrs. George Gould, farrier, Southampton; Charles Spooner, M.R.C.V.S. (author of a work on the 'Foot of the Horse'); and John Barford, also a member of the Royal College of Veterinary Surgeons, demonstrated quite clearly that the horse had a "seedy toe" on the off fore foot for some months previous to the sale. *Gould* and *Barford* stated that he had slight corns on both fore feet. The witnesses further stated that unprofessional men could not detect the disease, and that a farrier might shoe the horse for some time without finding it out. The disease was first of all perhaps two inches up the foot, and the horse might have the disease some time without going lame. It might be produced by a prick or bruise in shoeing, or by gravel getting under the shoe, and from other causes. The prick would make the horse go lame in a short time, but the seedy toe would come gradually.

Mr. R. W. Simonds said his client had felt it to be his duty to defend this action, as the letter written by the plaintiff to him in the first instance took him by surprise, and defendant felt that the offer of £10 to settle the matter might be misrepresented as an acceptance of money by plaintiff to hush the case up. He now wished the whole matter to be fully investigated by the Court. Defendant inquired of his blacksmith, servants, and others, to ascertain if there was any unsoundness, and he was persuaded that when the horse was sold he was perfectly sound. No doubt there was something the matter with him when the witnesses for the plaintiff examined him, but this must have been caused after the sale. The horse did not go lame for the whole eighteen months or two years that defendant kept him, and his blacksmith would show that the horse was perfectly sound and that there was no appearance of lameness at all prior to the sale. He (Mr. Simonds) would call several other witnesses who would state that the horse was sound, had no lameness, and was a quiet and good-tempered horse, which never shied at all. The injury to the foot had no doubt been caused by shoeing, and might have been done by the very blacksmith who first shod him at Southampton, and had been called as a witness for the plaintiff that day. If the "seedy toe" had been in existence for nine months, as stated in the evidence for the plaintiff, it must have been detected by the blacksmith before.

Mr. Cox, blacksmith; Henry Hutchings, his foreman; Henry Judd,

defendant's groom; George Martin, horse-breaker at Southampton and Chas. S. Green, M.R.C.V.S., were called in evidence for defendant.

Mr. Cox said the horse, in his opinion, was sound shortly before the sale, but had formerly a slight corn, which had disappeared lately; *Hutchings* never found anything the matter with him, but there was the stain of a corn which had gone away, but no "seedy toe;" *Judd* (who had hunted the horse for two seasons with the hounds) never saw him lame, nor shy at anything; *Martin* said the horse went quite sound, had no "drop" or lameness, didn't shy, and was quite sound now, as far as he knew; and *Mr. Green* stated that both of the fore feet were free from corns. This witness said, in addition, that from the point of the frog to the inside of the crust which forms the toe of the hoof horn had been cut away at the point of the toe. Such a state of things as existed would occur from a prick or an old "stud" being left in the hoof, or from a bruise. Inflammation being set in, matter would form within ten days, and if not evacuated, ulceration would ensue. He should think something had been the matter with it for a month or six weeks from the time of the primary injury. He believed that the injury had resulted from a prick or stab. He should not call this a "seedy toe," but an ulceration of the sensitive part of the toe.

The Judge thought it was clear, from the evidence of the scientific witness for the plaintiff, that the "seedy toe" existed in the horse for many months; but he thought it was one of those cases in which the defendant might know nothing about it.

Mr. Leigh.—That is part of our case. We do not believe defendant was aware of it, it being such a peculiar disease.

His Honour.—I must say that the evidence for the plaintiff has been given very clearly and consistently.

Verdict for the plaintiff for the full amount claimed, £23 18*s.* 6*d.*

KINGSTON COUNTY COURT, Tuesday, *July* 16*th.*

Important to Railway Companies.

Lee *v.* The South Western Railway Company.

Claim £9 10*s.* for four sheep alleged to have been injured through the negligence of defendants' servants in their transit from Petersfield to Kingston-upon-Thames.

Mr. Worsley, barrister, appeared for the company, and *Mr. W. Phillips*, of Kingston, for the plaintiff.

The plaintiff was called, and said, I am a cattle salesman residing at Woking, and on the 20th of March last I sent six sheep from Petersfield: I also purchased the same day an Alderney heifer and calf, to be forwarded to Woking station; I saw the sheep brought into the station at Petersfield; they were then perfectly sound, and on the following day the sheep were sold at 55*s.* each to Mr. Picknell, at Kingston market; they were placed in a pen, and when there they appeared very much exhausted; I afterwards had to refund Mr. Picknell the sum of £9 10*s.*, less the amount of £1 10*s.* for the skins.

Cross-examined.—The sheep were consigned to me for sale by Mr. T. Lintot, of Reigate, at Kingston market, and I received a commission for the sale.

Mr. Worsley suggested that the case was closed; that the property was Mr. Lintot's.

His Honour ruled to the contrary, and said that Mr. Lee was responsible.

Cross-examination resumed.—The sheep had been brought four miles on foot to Petersfield; I did not engage a truck for six sheep when it would hold thirty; I was to pay so much per head; I did not see the sheep at Woking; I sold them at the full market value to Mr. Picknell; I again saw the sheep at Kingston market; I called to see Mr. Scott several times at the Waterloo station, but could not succeed in seeing him, and on the 17th of May I sent a claim in writing to the company, but I did not complain to the company's servants; I might have mentioned it to the porters; I have been told some time back by Mr. Scott that if I sustained any damage at any time I was to apply to him, and I did so; the receipt put in is the one I received from Picknell.

James Burchett said—I am cowman in the employ of Mr. Lee, and on the 20th of March I went to Woking station for a cow and calf, and in the same truck six or eight sheep were lying in one corner of the truck; the cow was loose, and had full run of the truck; I had nothing to do with the sheep.

William Laming, a driver, said—On the 21st of March last I took six sheep out of a truck at the station; I noticed a lot of blood about them and one was so bad that it could not walk; a small portion of the gut was hanging from that one; I did not tell Mr. Lee or Mr. Picknell that the sheep were injured.

George Picknell, butcher, said—On the 21st of March last, I purchased in Kingston market six sheep of Mr. Lee, at 55*s.* each, and they were sent up to my sheep-pen. On the following morning four of them were dead, and they were skinned; I found the skins full of holes, and their bellies were bruised all over and quite putrid, and I was obliged to send them to be buried; I complained in the market to Mr. Lee about the sheep being down upon their legs, when he said that they were quite fresh the previous day; he afterwards paid me back the sum of £9 10*s.*

Mr. Worsley addressed his Honour upon the statement, and contended that the evidence adduced did not establish the plaintiff's case, and asked for a nonsuit.

His Honour said he certainly could not allow it, for there appeared every probability that the sheep had been injured by the heifer in protecting her calf in the truck.

Mr. Worsley maintained that the evidence did not justify such a conclusion; and the company, he submitted, were not responsible for the damage done to the sheep. He called—

David Armes, a porter at Woking station, who said—On the 20th of March last he remembered a truck arrived at that station with a cow and calf and six sheep; they might have been there half an hour; Mr. Lee's man took the cow and calf away; she appeared quiet in the truck; I saw no blood in the pen; I left duty at six o'clock; the next morning I saw nothing the matter with the sheep; it was quite dark at that time.

Cross-examined.—I did not examine the sheep, as it was not my duty to do so; when I took the cow and calf out, they got up on their legs and appeared all right.

Thomas Cockman, an inspector at the Woking station, said that on the morning of the 21st of March he saw the sheep in the truck; they got up and walked about the truck. He saw nothing the matter with them.

By his Honour.—In some cases we put heifers, calves, and sheep together. Did not closely examine the sheep.

William Edwards, a railway porter at Kingston station, said that on the morning in question he took the sheep out of the truck and delivered them to Laming the drover; he saw nothing amiss with them, nor did Laming say anything about them; saw no blood in the pen.

Cross-examined.—There were about 140 sheep delivered by me the same morning; Mr. Lee's were in a truck by themselves.

Mr. Picknell, recalled, said the injury must have been of much longer standing than that of the previous night.

Laming, recalled, said he had a dog with him when he fetched the sheep, but it never touched them.

His Honour, in recapitulating the evidence, said that it was not right, nor could any person for a moment think it was correct, to put a heifer and a calf with six sheep, for the heifer naturally would attack the sheep and drive them, and he had no doubt that it was a negligent act on the part of the company's servants, and he could have no doubt as to their responsibility. The evidence of the plaintiff's witnesses was really very clear and conclusive, and he felt that he was bound to give a verdict for the plaintiff, with attorney's costs and for three witnesses, to be paid in a week, with the plaintiff's travelling expenses from Woking.

BOW STREET.

A Cabman's Notion of Humanity.

George Stagle, a cab-driver, appeared to answer a summons which had been issued at the instance of the Society for the Prevention of Cruelty to Animals, charging him with cruelly flogging and otherwise ill-treating a horse.

Mr. Frank Whittaker Bush, of Old square, Lincoln's Inn, deposed—On the afternoon of the 26th ult. I was passing along Carey Street, in the direction of Lincoln's Inn, when I saw the defendant driving a cab. He was standing up and flogging the horse so severely that the blood was streaming from his flanks. The horse was walking on three legs, being lame in one foot in consequence of the loss of a shoe.

James Rutherford, one of the officers of the Society for the Prevention of Cruelty to Animals, deposed—I went on the evening in question to the stables of defendant's employer, Mr. Mill, and waited till defendant came in with his cab. The horse was quite lame from the loss of his shoe, and his sides were streaming with blood. He was much marked with weals under his flank.

Mr. Mill, the proprietor of the horse and cab, also spoke to the marks of ill-usage on the body of the horse. The poor animal had clearly been treated with great and unnecessary cruelty.

Defendant admitted that he flogged the horse severely, but said he did so really from a motive of humanity. The poor creature, being lame from the loss of the shoe, was suffering very much, and, indeed, could hardly get along, so he used the whip in order to get the poor thing home as soon as possible, and not to protract its pain by allowing it to go slowly.

Mr Henry, not being satisfied with the defendant's humanity, fined him 30*s*. and costs, or in default to be imprisoned for three weeks.

The fine not being paid, the defendant was removed in the prison van.

OBITUARY.

Death of Professor Quekett, F.R.S.—This eminent member of the medical profession died on the 20th inst., at Pangbourne, Berkshire. The deceased was Professor of Histology in the Royal College of Surgeons of England, and Curator of the Hunterian Museum, having succeeded Professor Owen in 1856, on that gentleman's appointment as chief of the Natural History Department of the British Museum. Mr. John T. Quekett was born at Langport, in Somersetshire, in 1815. He commenced his professional studies at the London Hospital, in the medical school of which institution his brother, the late Mr. E. J. Quekett, was Lecturer on Botany. Having passed his examination at the College of Surgeons in April, 1840, he competed for and obtained, in the following June, one of the Studentships in Anatomy at the College; and, in 1843, was appointed Assistant-Curator of the Hunterian Museum. The deceased was a Fellow of the Royal and Linnean Societies. He took an active part in the formation of the Microscopical Society, and contributed many valuable papers to its 'Transactions;' besides which he was the author of the following works:—'Practical Treatise on the Use of the Microscope, including the different Methods of Preparing and Examining Animal, Vegetable, and Mineral Substances;' and 'Lectures on Histology, delivered at the Royal College of Surgeons.' Although known for his microscopical researches, Professor Quekett had devoted himself very successfully to the observation of facts throughout the whole field of natural history science.—*Lancet, Aug. 24th,* 1861.

Died recently at Melbourne, Australia, Robert Wordie, M.R.C.V.S., æt. 36. His diploma bears date April 22d, 1845.

Also, at Dalry, N. B., William Walker, M.R.C.V.S., æt. 35. His diploma bears date April 23d, 1845.

It is a singular circumstance that we should have to record in the same number, the deaths of two members of the profession, both pupils at the Edinburgh College, who were so nearly of the same age, and who passed their examination within a day of each other.

ERRATUM.

We are requested by the Secretary to the Scottish Board of Examiners to correct a mistake which occurred in our June number, p. 366, in giving the names of those who had passed the examination of the Royal College of Veterinary Surgeons. Instead of *D. McMeechan*, it should have been *Duncan McNab McEachran,* Campbeltown, Argyleshire.

THE

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Communications and Cases.

SCIENTIFIC AND ANALYTICAL CHEMISTRY.

ON A NEW FORM OF CHLORIDE OF SODIUM.

By Richard V. Tuson,
Professor of Chemistry to the Royal Veterinary College, and Lecturer on Chemistry at Charing Cross Hospital.

That chloride of potassium, which ordinarily crystallizes in cubes, is nevertheless often found as an efflorescence on various vegetable extracts assuming the acicular form, is well known.

Hitherto, I believe, the corresponding compound, chloride of sodium, has never been observed in needle-shaped crystals, but nearly always in cubes.

Occasionally, however, it deposits from urine in octahedra, and when a solution of the salt in water is evaporated at a temperature not exceeding 14° Fahr. it crystallizes in hexagonal tables (Ehrenberg), which contain, according to Fuchs, six equivalents, but, according to Mitscherlich, four equivalents of water of crystallization. At temperatures above 14° Fahr. these hexagonal crystals lose their water of crystallization, and are resolved into a congeries of minute cubes. Chloride of sodium, it is also stated, may be obtained in large, oblique rhombic prisms, having the formula NaCl+4Aq. They effloresce in air below 32° Fahr. (Mitscherlich), deliquesce (? effloresce) in air above 32° Fahr. (Fuchs), and leave a powder of small cubes.

Lately, on opening a tightly fitted tin box, in which a quantity of salmon-roe paste had been allowed to remain for nearly three years, it was found that the organic matter was covered by an efflorescence of acicular crystals. One of my

pupils collected some of these crystals, analysed them, and pronounced them to consist entirely of chloride of sodium. As I had never heard of chloride of sodium crystallizing in needles, their examination was repeated, but still the same results were obtained. Some of the crystals were next dissolved in water, and the solution produced submitted to spontaneous evaporation, when the whole of the salt deposited in the ordinary or cubical form. This result, therefore, fully confirms the conclusions deduced from analysis.

The crystals, some of which are nearly half an inch long, appear to be rectangular prisms, terminated by four-sided pyramids. They are beautifully clear, colourless, transparent, elastic, longitudinally and transversely striated, and many are bent or contorted in a manner similar to the native hydrated sulphate of lime called selenite by mineralogists.

The acicular crystals are anhydrous, and undergo no change in form, or diminution in transparency, when exposed to air at ordinary temperatures, or even at a low, red heat. The needles of chloride of sodium possess one property which is a very familiar characteristic of the cubical salt, namely, that when heated, they decrepitate. It is singular to remark that, at all events as far as we know at present, acicular varieties of the chlorides of potassium and of sodium are only developed in the presence of organic matter, just as the production of octahedral chloride of sodium appears to be due to the solution from which it crystallizes containing urea.

Since writing the foregoing I have observed an efflorescence of acicular chloride of sodium on an animal deposit, which was sent me for analysis, and which had been originally mixed with a solution of common salt to prevent it undergoing putrefaction.

ON NON-CERTIFICATED PRACTITIONERS.

By C. S. Green, M.R.C.V.S., Winchester.

In the June number of the *Veterinarian* I observe that the subject of persons practising as veterinary surgeons without a diploma is brought forward. On looking over the published list of human surgeons, &c., I find the following statements having reference to the illegality of practising as apothecaries without possessing the necessary qualifications, and thinking that it might throw some light on the course to be pursued,

so as to relieve us of our present position, and also seeing it stated that we have no power of inflicting a penalty, I forward you the whole detail, as follows, under the head of—

Practising as an apothecary without legal qualification an indictable offence.

"The Society of Apothecaries entertaining an opinion, which they have publicly expressed upon several occasions, that a penal check upon the practice of medicine by unqualified persons is indispensably necessary for the protection of the public, and that the pecuniary penalty imposed by the Apothecaries' Act is but ill-adapted for checking such practice, have long desired that a more summary mode of proceeding against illegal practitioners should be adopted, and they have advocated an alteration of the law in this respect whenever a favorable opportunity for so doing has presented itself. A recent decision of the Court of Queen's Bench, in a criminal prosecution instituted against an attorney for practising without a qualification, seemed to lead to the conclusion that, notwithstanding the specific pecuniary penalty imposed upon unqualified persons practising as apothecaries, such persons might be indicted criminally as for a misdemeanour. This decision appeared to the society to suggest a mode of proceeding for checking the illegal practice of medicine, which might be attended with such important results that they determined to lose no time in obtaining the highest legal opinions upon the subject. They therefore laid a case before the law officers of the Crown, and it will be found, from the answers given to the questions submitted to the Attorney and Solicitor-General, in consultation with Mr. F. Robinson, that it is the opinion of those learned gentlemen that an indictment will lie against a person who has practised as an apothecary without legal qualification. The society subjoin the questions proposed to counsel, and their answers thereto.

"'*Questions.*

"'1st. Whether an indictment will lie against a person who has practised as an apothecary without legal qualification, notwithstanding the particular penalty imposed upon persons so practising by the 20th section of the Act, and the disability imposed upon them by the 21st section? And if you should be of opinion that an indictment will lie—

"'2nd. In what courts, metropolitan or provincial, could

such an indictment be preferred, and could it be preferred at the instance of a private prosecutor?

"'3rd. Would it be competent for the Society of Apothecaries to prefer such an indictment, notwithstanding the interest given to the society in the pecuniary penalties imposed by the 29th section, and the particular remedy given to the society for the recovery of such penalties?

"'4th. What would be the extent of punishment which could be inflicted by law upon a person convicted of the offence of practising as an apothecary without legal qualification?

"'5th. Can any more summary proceeding than an indictment be resorted to for the punishment of persons practising as apothecaries without legal qualification?'

"'*Answers.*

"'1st. We think that an indictment will lie against a person who has practised as an apothecary without legal qualification, notwithstanding the particular penalty imposed by the 20th section of the Act, and the disability imposed by the 21st section.

"'2nd. The indictment may be preferred in any of the ordinary criminal courts having cognizance of misdemeanors committed in the county or place in which the party has so illegally practised, and it may be preferred at the instance of a private prosecutor.

"'3rd. We think it is competent for the Society of Apothecaries to prefer the indictment.

"'4th. The punishment, as in case of other misdemeanors, would be fine or imprisonment, or both, at the discretion of the court.

"'5th. We are not aware that any more summary proceeding than an indictment can be resorted to for the punishment of persons practising as apothecaries without legal qualification.

(Signed) "'John Jervis,
"'David Dundas,
"'Frederic Robinson.

"'Temple; *Nov.* 23, 1846.'

"It is, perhaps, hardly necessary for the society to point out the increased facilities which this mode of proceeding affords for putting the law in force against unqualified practitioners.

"Instead of proceeding for the recovery of penalties by a

civil action, which, in the case of a country practitioner, could only be tried at the spring and summer assizes, an indictment may be preferred at the quarter sessions and at the assizes also; and instead of the power of proceeding against unqualified practitioners being restricted, as in the case of the specific penalty imposed by the statute, to the society of apothecaries, it will be competent for any person to prefer an indictment who may be disposed to do so.

"Another distinction between the two modes of proceeding, which is likely to operate still more powerfully as a check upon illegal practice, is this, that whereas an individual against whom a judgment for a penalty is obtained, under the present form of proceeding, can relieve himself from the consequences of his offence by obtaining his discharge under the Bankrupt or Insolvent Acts; an individual found guilty, on indictment, of having practised as an apothecary without legal qualification will be punishable by fine and imprisonment, and will have to undergo whatever measure of punishment the criminal court may, in its discretion, award.

"The society sincerely hope that a public intimation that the penalties of the law can now be enforced against illegal practitioners of medicine more summarily than heretofore will deter all persons from practising as apothecaries who have not given such evidence of their competency to practise as the law demands. But if individuals who have not possessed themselves of a legal qualification will persist in practising in the absence of such qualification, they will do so at the risk of being criminally indicted for the offence, at the instance of any individual prosecutor who may be induced to prefer an indictment against them.

"The society, on their part, will be ready, as they ever have been, to enforce the law to the extent of the means placed at their disposal, but those means are inadequate to the institution of frequent prosecutions. It may, therefore, be anticipated that indictment will be preferred at the instance of other parties, and the society take this opportunity of stating that they will endeavour to render such experience as they may have acquired in administering the Act of 1815 available in furthering the ends of justice, and that they will be prepared, upon proper application, to furnish any information in connexion with the subject of illegal practice which they may have it in their power to afford.

"APOTHECARIES' HALL; *Dec.* 10, 1846."

CASE OF STRANGULATED ILIUM.

By W. J. Bland, M.R.C.V.S.

Boston, *Sept.* 11, 1861.

Dear Sir,—I beg to forward you the strangulated portion of the ilium of a mare, with the history of the case, and shall feel much obliged if you will kindly give me your opinion as to the cause of the formation of the ligature, and of the tumour from which it appears to arise.

I am, dear Sir, yours truly,
W. J. Bland.

To Professor Varnell,
Royal Veterinary College.

September 5th, 2.30 p.m.—I was requested by Mr. Short, of Wyberton, to attend an aged, thorough-bred mare, that was taken suddenly ill as he was riding her this morning. Upon examination, I found her showing symptoms of abdominal pain, by continually pawing with her fore feet, the pulse about 60, the visible mucous membranes highly injected, and she frequently passed small quantities of dung, and staled freely. I treated it as a case of enteritis.

9.30 p.m.—There is no visible alteration in the mare. Same treatment continued.

6th, 6.30 a.m.—The mare is much in the same condition as last night. Treatment continued as before.

12.30 p.m.—The mare is so much worse that I informed her owner that further treatment would be quite useless. She died at 3 p.m.

6.30 p.m.—I made a post-mortem examination, and found the intestines highly inflamed, and the portion of the ilium forwarded strangulated. None of the other viscera presented any marks of disease.

REPLY TO THE ABOVE BY MR. VARNELL.

Dear Sir,—I have carefully examined the strangulated intestines sent by you, namely, the ilium and jejunum, both included in one ligature. These portions of intestines present the usual phenomena of strangulation, therefore, in that respect, need no comment.

You ask my opinion as to the cause of the ligature and the tumour attached to it. The tumour itself is composed of fat, with the exception of its external peritoneal covering and

the branches of a blood-vessel of considerable size which supplied it.

After having untwisted the ligature and spread out the mesentery, I was enabled to see the original situation of the tumour, and to trace the portion of membrane to which it was attached. This I found to be about twelve inches long, and had become so much twisted as to form a cord, in the centre of which I found an artery that increased its firmness. I can conceive that this unfortunate affair may have taken place somewhat in the following way. A fatty tumour, about the size of a walnut, had formed in the mesentery, between the two layers of peritoneum—which is not uncommon—and distant about three inches from the detached border of the intestine. This tumour became pedunculated, and, from some unaccountable movements of the viscera, dragged upon its point of attachment with sufficient force to tear the mesentery, taking with it its blood-vessel and a part of the membrane. The rent speedily increased, thus producing a considerable opening, through which a portion of the jejunum passed. The pendulous tumour, with its long pedicle, by some mysterious means passed round both the ilium and the jejunum, and then around itself, forming a complete knot, which could not slip on account of the tumour at its end; and as the intestines at this point gradually became enlarged, the ligature, as we can imagine it would do, became much tighter, thus effectually strangulating the portions of intestine above alluded to. Such is the only explanation I can give of the formation of the tumour, ligature, and the effects.

I am, Sir, your obedient servant,

GEORGE VARNELL,

Assistant Professor.

PYÆMIA IN A FOAL.

By W. HEAPS, M.R.C.V.S., Preston.

ON the 9th of May, 1861, I was requested by Mr. Sutton, of Moor Hall, to attend a very valuable horse-foal, which he said had, by some means or other, suddenly fallen lame. Upon my arrival I found the near hind leg of the animal slightly affected with lameness, which I was inclined to attribute to rheumatism, and prescribed accordingly.

I did not again visit my patient until the 12th, when I was glad to find a decided improvement, the lameness having almost passed away. A lotion, consisting of Tr. Opii and Lin. Saponis, which had been applied twice a day since my first visit, was ordered to be continued a few days longer, at the expiration of which period I hoped to see the animal quite sound.

This expectation, however, was not realised, for on the evening of the 23d I was much surprised by the arrival of a messenger, saying that the animal was very much worse, and that I was to lose no time in visiting him. I accordingly went, and found him in a recumbent position, being unable to rise without assistance; pulse quick and feeble; mucous membranes injected; mouth hot and dry; belly bedewed with a clammy perspiration; legs cold, excepting the lame one, which was hot, and evidently the seat of very acute pain. On further examination, an abscess was discovered on the inner and upper part of the thigh, the opening of which afforded him considerable relief. Ordered hot fomentations, followed by poultices, and as the bowels were constipated, I administered—

Ol. Ricini, ℥iij;
Tr. Opii, ʒij.

On the 24th my patient was much relieved; had rested well during the night, the abscess was discharging freely, and the appetite tolerably good.

27th.—Another abscess was opened in the upper part of the near fore leg. There was very little pain or swelling of the hind leg, and the abscess continued to discharge freely. He had for the last two days been completely off his appetite, and as his powers were fast sinking, I ordered port wine, with whisked eggs, to be administered *ad libitum*.

29th.—The abscesses continued to discharge freely; he had been much easier since the last was opened, and took a little milk several times during the day.

On the 31st the animal still continued to improve a little, took his food pretty well, and did not seem to have much pain.

June 1st.—As no fæces had been voided, administered—

Ol. Ricini, ℥iij.

2d.—He was very restless, evidently suffering from severe abdominal pains, and as the bowels were still constipated, ordered—

Ol. Ricini, ℥iij;
Tr. Opii, ʒiij.

To be repeated if required.

4th.—The bowels had been freely opened, and the animal appeared somewhat easier than on my preceding visit.

On the 5th the stifle again became the seat of abscess, and on the 8th a *pectoral* abscess was opened; the animal's powers were much weakened, but he still continued to take a little food, and by the aid of a man on each side to support him, he was enabled to suck the mother.

12th.—The bowels were again obstinately constipated, and evidently the seat of acute pain, accompanied by frequent efforts to void both fæces and urine. A small catheter was passed, but the bladder was found to be almost empty. Upon the withdrawal of the instrument, however, a large quantity of purulent matter was voided per anum, evidently showing that an abscess had formed in some part of the rectum. He was now entirely off his feed, taking nothing but the wine and eggs, which had been regularly administered since they were first ordered. His strength, notwithstanding all our efforts, gradually diminished until the 16th, when he died.

Autopsy.—The whole of the small intestines were studded in different parts with petechial spots, and, upon cutting into the gut, it was found throughout to be gorged with purulent matter. The whole of the abdominal and thoracic viscera were softened in their structure, and an abscess had formed in the left ureter, midway between the kidney and bladder.

CASE OF HERNIA.

By G. Lewis, M.V.C.E., Monmouth.

An entire colt, three years old, half bred, was placed under my care for hernia, which had existed for nearly two years, and as it continued to increase in size, the owner desired me to operate upon it. The hernia was as large as a man's hat, and situated on the near side, directly below the cartilages of several of the false ribs. I will not trouble your readers with details, but suffice it to say that the horse was placed under the influence of chloroform before the operation was commenced. I then made an incision, nine inches in length, over the sac, through the skin and panniculus carnosus, after which I laid open the sac, and having excised some portion of omentum, my assistant, Mr. C. Cunningham, keeping in the bowels with a wet cloth, I took a needle armed with a metallic

wire, of a large size, and passed it between the cartilages and the insertion of the diaphragm, and then through the muscles below, and here I was obliged to "dip deep," for the muscles had receded far from each other. Four sutures were thus inserted, their ends were then brought together and tied. Some more sutures of small wire were then passed through the skin and panniculus, and the animal's feet released from the hobbles, which had been placed upon them for safety.

The animal was allowed to remain lying down, when, after a short time, it arose of his own will. The only pain evinced during the operation was when the needle was being passed through the skin the last time. He was under the partial influence of the anæsthetic for several hours after the operation, which I consider was greatly in his favour. The operation was performed on 24th June last, and the animal remained under my care for three weeks, when it was sent home and is now doing well.

FRACTURE OF THE METATARSAL BONES OF A COW.

By the Same.

A cow, with a fine calf by her side, had the misfortune to fracture the metatarsal bones of the near leg. It was a compound comminuted fracture, and the only chance of saving the animal's life was by amputating the injured limb, which I did within about two and a half inches of the hock-joint. The operation occupied but a very short time, and within an hour after it the animal was lying down and chewing the cud.

I operated on 11th July last, and she is now doing well.

It may be remembered that I reported a case in the *Veterinary Record* of the amputation of the fore leg of a heifer by me. That case also did well, and the animal "fed out well," and I make no doubt but that this one will do so likewise, thus proving that either of the limbs of the ox tribe may be amputated, and the animal do well afterwards for beef.

I will not trouble you with more cases this time, but permit me to remark that, although the veterinary surgeon must never expect to carve his way either to fortune or to fame with his operating knife, yet I am convinced, from experience,

that many valuable animals have been destroyed, or permitted to die by the farrier and charlatan, when a simple operation might have saved both the life of the animal and the pocket of the owner. On the other hand, the empiric will sometimes be found to attempt the performance of operations from which the veterinary surgeon would shrink:

"Fools rush in where angels fear to tread."

And should he succeed, he is praised as a clever fellow; but should chance not favour him, having no reputation to lose, little is thought of the failure, no matter in however bungling a manner his work has been done, or how cruelly the animal has been treated. Truly this is vivisection, but not done even with a view to promote science, nor by hands taught to operate, or with instruments adapted for the purpose, but simply from a desire to gratify a morbid ambition. Over the door of such a one should be written, "Mangling done here."

And lest it should be thought that this is a mere picture of imagination, permit me to mention the following facts. A horse, the property of Messrs. H. and W., worth about £28, received some trifling injury to the near fore foot. It was placed under the treatment of a farrier, who cut and blistered until the poor animal was brought to walk, first upon its toe, and then upon the fore part of the fetlock-joint.

It was subjected to this misery for some time, when another farrier, still more clever, in his own opinion, than the former one, undertook the case. He had the animal under his care, or rather cruelty, for six weeks, when the superintendent of police, hearing of the case, desired my attendance, and oh! horrible! almost too horrible for description! there stood the poor animal, nearly a skeleton, with a bar of iron up the course of the flexor tendons, the lower end of the metacarpal bone protruding in front, and a large, flat, rusty bar of iron, from an old wheel, placed in front of the joint and in contact with the trochleal surface of the denuded bone. These instruments of torture were firmly bound down by straps and strings, which, by continued pressure, had caused deep wounds, from which large quantities of vermin were crawling. Added to this, a piece of board, a potion of the head of an old cask, was wedged in to tighten the whole, and a strong solution of Hydrarg. Bichlor. poured into the wounds to destroy the vermin concluded the scene!

I need scarcely add that I ordered the poor animal to be destroyed forthwith. Upon inspection of the leg after death it was evident that the simple operation of tendiotomy,

performed in proper time, would have restored the poor animal to its former usefulness; but even this would not have been necessary had proper measures been adopted earlier.

One other instance of this nature, and I have done. A short time since, when going into the country, I met a small farmer driving a poor unfortunate cow, suffering from chronic inversion of the uterus, which organ was pendulous and besmeared with blood and filth. The edges of the vagina were torn and lacerated by the "packing needle" of the farrier, and in a state of suppuration, the whole presenting a disgusting spectacle. A bar of iron was stuck through the skin of the back, underneath which was twisted a small cord or rope. I inquired, in as kind a manner as I could, what was the matter with the cow (he had driven the poor animal nearly three miles in this wretched state). In reply, I received nothing but abuse, being told that his farrier had done it, and all that had been done was by his farrier's orders. Of course I told him that I should report him to the police if I heard of the poor brute being in that state on my return.

He informed me that the bar of iron was stuck through her back to prevent "her heaving."

Oh! when will science step forth, joined with her sister humanity, and stop the progress of cruelty, not only in another nation, but at home and at our own doors?

I understand that circulars are being sent through the country from the "Society for the Prevention of Cruelty to Animals," to gentlemen in various parts, inquiring if vivisection is practised in their neighbourhoods. I would that this noble society wield its power still more, and send to every veterinary surgeon throughout the length and breadth of the land a printed circular periodically, inquiring if any cases of cruelty have come under his notice. This, I have no doubt, would tend to prevent the wanton infliction of cruelty which is too often, alas! practised, and give the charlatan time to think that

> "He who made him, made the brute;
> He who gave him speech and reason, formed him mute."

Silently he suffers, but God's watchful eye hears his moan and marks man's cruelty.

CASE OF HEMIPLEGIA.

By J. H. Ferguson, Veterinary Student, Edinburgh.

On the 8th April last I was requested to attend a three-year-old colt, the property of a gentleman near Cove, Dumbartonshire.

The animal was of the light-draught breed, reared by his owner, and at the time of my visit was in rather a poor condition. Up to that date he had been remarkably healthy, and not subject to any apparent derangement whatever, but for two or three days previously he had been dull and appeared unwell, and had been treated by a farrier in the vicinity.

I found him lethargic, and his pulse a little slower than natural, but otherwise unaltered; his neck was considerably arched, and his head turned to the near side. The pupils of eyes were somewhat dilated, the eyelids half closed, and the superior labia also distended towards the near side. Although the animal seemingly had all his senses, he looked very bewildered, and maintained the standing position only with great difficulty. The weakness was evidently greatest on the right side, and he would have staggered and fallen had he not been supported. Scarcely any power whatever existed in his limbs, and it was dangerous to attempt to move him. The mucous membranes were of their natural colour, and the appetite was good.

Treatment.—I applied a blister to the head and over the third cervical vertebra; administered a cathartic, consisting of Aloës Barb. and Chlor. Hydr., twice a day. I also directed that he should be well clothed, have his legs bandaged, and be fed principally on sloppy bran mashes.

On the 12th I again visited my patient, and found that the medicine had operated freely, and although the previous symptoms still showed themselves, they were somewhat lessened in intensity, and he could walk and otherwise use his limbs with greater freedom. He had, however, the same dull and depressed appearance which he exhibited on my first seeing him.

I again blistered the cranium, and continued to give half-drachm doses of Chlor. Hydr. daily.

On the 17th he appeared much improved, and walked considerably steadier; the arching of his neck was much less, and his pulse in a perfectly normal state. I repeated the blister, and again gave him aloës and calomel, still feeding him on bran mashes.

On the 22d he was still improving. His bowels, however, being rather costive, I ordered him a pint and a half of linseed oil.

On the 1st May his owner reported to me that up to that day he was continuing to improve and to gain strength. I therefore allowed him to be put to gentle work, and ordered grass to be given him, but on the 3d he had another attack, when the previous symptoms were again manifested, although not so prominently as at first. The superior labia, however, was more twisted, the neck more curved, and the lower lid of the left eye had fallen, the eyeball turned superiorly, and a white speck or scale appeared on the cornea. I bathed the eye with tepid water, bandaged up the lower eyelid, and ordered it to be fomented at intervals. I also bled from the facial vein, there being a considerable amount of inflammation from the exposure of the eyeball, and once more blistered the cranium.

On the 10th I had him carefully led out, when he shook his head and seemed playful; but while walking he inclined to the right side, and when eating grass he also twisted his head to the same side. There was an escape of light-coloured pus from the eye, and a scale on the cornea where the speck had shown itself formerly; the effusion, however, had rather subsided from the day before, and the eyeball became collapsed.

I ordered him to be allowed to go loose in the park during the day.

On the 16th he had another attack, similar in all respects to the two former ones, and on the 17th I inserted a large seton across the atlas, and allowed him to be left in the park the whole day, but directed him to be taken in at night.

From this time up to the 20th the animal continued to improve, when he appeared quite recovered, and was doing his ordinary work with apparent ease and freedom. He has since that time continued quite well, showing no vestiges of the former symptoms, and to any ordinary observer he exhibits no appearance whatever of ever having been subjected to such a formidable disease.

In this case I consider the affection to have been caused by an abnormal effusion of blood or serum into the lateral ventricles of the brain. I am of opinion that the symptoms are traceable to no other known cause. The attack may also, in this particular instance, have been hereditary in the animal, as his sire died of a cerebral disease.

ON COW-SPAYING.

By Andrew Calley, Kirkton-by-Burntisland.

Gentlemen,—As you did me the honour, two years ago, to publish in your widely circulated Journal the history which I transmitted to you of "a mare destroyed from difficult foaling," and also the subsequent statements I was called upon to make in self-defence, none of which, notwithstanding the attempts made to mystify the subject, have ever been refuted, I therefore entertain the hope that you may not consider the following observations on cow-spaying as unworthy of a place in your columns.

My narrative is derived from the most authentic sources of information, and drawn up with a scrupulous adherence to facts, and to facts only. In sending you this communication I have been influenced by no other feeling but one of sincere and honest regard for the veterinary profession, in which corps, I know, that in my humble capacity as a farrier, I am nothing more than a working pioneer; but I am, and have ever been, desirous of improving myself in all that relates to the exercise of my daily duties and of obtaining the best advice. I am under great obligations to veterinary surgeons for what I have learned from them regarding those affections and diseases in the horse which come within the ordinary range of my practice, and I believe you, who are editors of the leading veterinary periodical in this country, and professors in the London Veterinary College, will not consider the subject of cow-spaying beneath your scientific research, but will give the profession and the public the benefit of your experience and knowledge by an editorial article, showing the real nature and consequences of experimenting on the bovine race, by destroying, in the female portion of it, the principal organ of reproduction by means of knives introduced through the vagina into the generative organs, for the purpose of breaking down and removing the ovaries. I am well aware all I can say is but as a drop in the bucket on so wide and important a subject, but your remarks will serve as directing lights to guide hundreds such as I am, and who are anxious to obtain established rules of practice.

At page 262 of a small treatise on 'Dairy Stock, its Selection, Diseases, and Produce,' published this year by Professor Gamgee, Edinburgh, he states, with reference to the immense loss sustained by the present system of dairy management in towns, that "the spaying of cows is un-

questionably the safest method to avert such losses. A spayed cow yields milk about twice as long, hence twice as much, as that given by a cow under ordinary circumstances. She fattens readily, laying on flesh from the time she is spayed, and very rapidly after she has ceased to give milk. The condition of a cow contrasts most favorably with that of other cows in a town byre, and the flesh is, of course, tender and rich. There is no loss as by pregnant cows, and spaying is the only and safe means of cure for æstromania." Has Mr. Gamgee not taken a somewhat narrow and superficial view of the causes of the loss sustained in town dairies, when he affirms that spaying is the remedy to avert the evil? Like the speculations of all theorists, his opinion is one-sided, and what it wants in proof is made up by mere affirmation. He never for a moment considers the great and sudden changes which town-dairy cows are unavoidably subjected to on the all-important points of air, exercise, and diet. All at once deprived of the two former, and at the same time of their usual and natural articles of food, by the substitution of a new form of dietary nourishment, which is highly exciting and artificial, can it be matter of wonder that animals so fed, without the natural accessaries to aid the process of digestion, should be liable to all the diseases of high and over-feeding, consequent upon the congestion of blood in the various important vital organs? These are necessary evils inherent in the system, which entails an almost annual change of cows upon their proprietors. Let Mr. Gamgee say if he thinks that spaying will prevent such consequences.

Two important facts are established with reference to the system of town-dairy management. The first is, that it calls for nearly an annual renewal of dairy stock, as the animals at the expiration of that period are most profitably disposed of to fleshers for slaughtering, being not fit for any other purpose; and the second is, that the produce—milk and butter—of such as are stall-fed, in a great measure on grass from meadows irrigated by the drainage of large towns, is deteriorated in quality, both the milk and butter more rapidly undergoing decomposition than what is obtained from country-fed-cows.

The difference between the quality and price of milk and butter obtained from cows fed in country and town dairies has been long well known, and the omission of any reference to so striking a deterioration of produce would be remarkable in any treatise on dairy stock, but is especially and altogether inexplicable on the part of Mr. Gamgee, seeing he has annexed to the advertisement of his own publication the

recommendation, to quote his own words, that "under the head milk, the author has *considered particularly* the circumstances which lead to its *deterioration*." The effect of town-dairy milk on the human body, and particularly on infants, is not denied, and I can attest from personal experience the great difference in quality of country over town-made butter.

In 1857 a paper appeared in the October number of the 'Highland Society's Transactions,' by Mr. Gamgee, in which he advocates (referring to evidence from foreign authorities) the advantages of spaying dairy cows. In that article, at page 102, he states he has "procured the necessary instruments from Paris, and am engaged in testing practically the truth of all that has been asserted, in the hope in time to have occasion to report on the advantages of spaying dairy cows in Edinburgh and other British towns." The results of some of the operations performed by Mr. Gamgee, in Edinburgh and Glasgow, are well known, and are, I believe, unfavorable for the cow-spaying practice; but it is beyond my province to speak of them. Still I am at a loss to know, as he has stated, "that it is very likely in country dairies the operation will not answer;" why, he selected cows in a country steading near Burntisland to experiment upon. In the chapter on cow-spaying, in his treatise referred to, which is a reprint of his paper in the Society's journal, he says, at page 260:—"Since then (that is, in 1857) I have tested the operation as occasion presented itself, and am fully convinced of its importance for dairy cows kept in large towns, and, under certain circumstances, for cows even in the country, such as very lean and abundantly milking cows." He tells his readers that he has operated on nineteen cows, and that "one alone has been at all unwell after the third day." This cow died, but he believes not from the consequences of the operation, but from pleuro-pneumonia. As he neither mentions the day on which the cow died after the operation, the symptoms of the affection from which she died, nor the appearances on dissection, the case is worthless and unillustrative on the incidence of the subject at issue, for, without questioning his opinion, the matter is still left open for dispute how far purulent effusions in the chest are referable to operative lesions in the generative organs. I presume that Mr. Gamgee must include the six cases operated on by him in the immediate neighbourhood where I practise, for all the particulars of which I can adduce undoubted proofs, and hold myself personally responsible for their truth and correctness. I shall therefore give what he promised—the results, as the operation received what he says it deserves,

"a fair trial;" but it has not obtained from him, what it equally deserves, a full and impartial narrative of the effects resulting from it. All the six cows were spayed during the autumn of 1859 by Mr. Gamgee, in the course of two weeks or so. They belonged to one proprietor, and were valuable and healthy animals in milk, their ages being from four years and upwards. A very intelligent and skilful veterinary surgeon (Mr. Balfour, from Kirkcaldy) was present at one of the operations, and witnessed Mr. Gamgee's proceedings—the introduction of his hand into the vagina, and the employment of a knife and forceps, with the latter of which the ovaries were brought away, much broken down, as Mr. Gamgee explained. I shall now state the effects of the spaying upon these six cows, as Mr. Gamgee has not thought proper to give any details whatever of his nineteen cases, but has lumped them all together in the most summary way. He says he has tested the operation, but as he has kept the special result to himself no man can make head or tail of his operative proceedings. He affirms, at page 253 of his 'Dairy Stock Treatise,' that Charlier's method of operating, which he follows, "had always the advantage of efficacy and absence of danger, which are the great requisites."

All the six cows fell off, both in milk and condition, after the operation, and not one of them continued in the same thriving state they were in before it. None of the cows died immediately from the operation, but they were all sold in about three months subsequent to being operated upon, it being considered best to dispose of them, as they were not thriving. So far, therefore, as the operation was concerned, in place of doing good, it turned out a failure in every instance. One of the cows which had thriven worst fell down three weeks after the operation, and could not rise again; not being able to walk, it was taken away and slaughtered. Other two of them, not improving, were sold for the flesh-market in the neighbourhood six weeks after the operation. Other two were sold in Edinburgh, and the sixth one also was parted with, for it came regularly a *bulling*, so that the operation, always premising that it was skilfully performed, was not only a failure, but even did not act, as he asserts it does, in preventing one of the mutilated cows from coming in season. In three months the byre required to be replenished by a new stock of milkers; but I feel certain that their organs of reproduction, as well as their secretion of milk, will be left to the operation of natural laws, and be protected from such unprofitable experiments, as the results of the operation performed by Mr. Gamgee have proved cow-

spaying to be. Indeed, Mr. Gamgee himself got the best answer on the subject when, on visiting the byres, he inquired of the milkmaid, who had charge of the cows and to whom he was not known, how the cows were thriving after the operations, when he was told by her that not one of them had a day to do well after they had been operated on by some one from Edinburgh.

Mr. Gamgee, on all occasions, and very much of late, has passed unworthy aspersions on farriers, classifying under the name of quacks and empirics such as practise the humbler but useful duties of the veterinary art, whom he designates as cow-leeches and sow-spayers. The honour and reputation of all engaged in the different departments of a profession or trade are derived solely from an honest and truthful discharge of duty, and not from arrogant pretensions of superiority; and he forgets that, by attempting to degrade us with injurious names, while he practises the very trade he disparages, and in becoming a cow-spayer himself, for which he charges and receives fees for benefits promised and assured, he subjects his vocation to the very imputations with which that of quacks and empirics are so justly charged.

I am, Gentlemen,

Your most obedient servant,

ANDREW CALLEY.

To the Editors of the 'Veterinarian.'

Facts and Observations.

EXISTENCE OF THE CATTLE PLAGUE IN GALATZ.

A LETTER, dated Galatz, August 24th, says:—"Owing to the appearance of the cattle disease, the third and fourth quarters of the town are in quarantine, two of the barriers are closed, and communication with the interior is maintained by one single barrier. Precautions have been taken to prevent the town cattle mixing with those arriving from the interior; but so contagious is the disease, that it is to be greatly feared that the whole town will shortly be placed in quarantine.—*Bell's Messenger.*

SIBERIAN EPIZOOTIC.

The Petersburg correspondent of the *Daily Telegraph*, under the head of "Russia," states that the terrible Siberian epidemic, as it is called, continues its ravages in the animal world of the western provinces. In the districts Schlüsselburg, New Ladoga, Luga, and Zarskoje, which are all within a short distance of St. Petersburg, as many as 4400 horses, 890 cows, and 319 sheep have fallen within the last two months. Of the remoter districts we have not received any exact numbers, but the state of things there may be gathered from the circumstance that the extensive exportation of cattle to Germany has entirely ceased.

ARSENIOUS ACID A SUBSTITUTE FOR QUININE.

Mr. J. Turner, surgeon to H.M. Brigade, Bombay Horse Artillery, has for the past twenty years successfully resorted to the use of arsenious acid, in large doses, in cases of intermittent fever. He was induced to employ it as a substitute for quinine, on account of the great drain upon the cinchona tree, and its failure in India. He considers the fears of any inconvenience or danger arising from the agent to be much exaggerated.

SOLUTION FOR THE PRESERVATION OF SPECIMENS.

Arseniated alcohol has been successfully employed for many years by M. Leprieur for the preservation of specimens in natural history, and especially insects, which retain in their organs quite enough of the arsenious acid to repel the attacks of larvæ.

IODINE AND PHOSPHATES IN RAIN WATER.

M. De Luca is of opinion that the existence of these substances only occurs in water taken from near the surface of the earth, and that the atmospheric currents might easily raise them from the soil.

COAL-TAR SOAP.

KNOWING the efficacy of tar in many skin affections, we have thought the following formula, recommended by M. Demeaux, and extracted from the *Pharmaceutical Journal*, might be resorted to, especially for the dog.

Equal parts of coal-tar, soap, and alcohol, are to be heated together in a bath until complete solution is effected, and on cooling, a very soluble soap is produced, which, with water, makes a stable emulsion.

It may be used in any degree of concentration, being very manageable, and its great solubility in cold or warm water, prevents it permanently soiling any substance it comes in contact with.

BLOOD-CORPUSCLES IN THE RETINA.

DR. L. REUBEN, of New York, on looking through a thick plate of blue cobalt glass at a clear, bright sky, observed an appearance of movement of numerous minute, shining, lucid points, or bead-like bodies. These movements or impulsions were synchronous with the pulsations of the heart, and in all directions. These and other facts he states to be in agreement with the hypothesis that the lucid lines are quasi-visible traces of the corpuscles of the blood moving in the vessels of the retina.

THE THREE PRIMARY COLOURS.

PROFESSOR J. C. MAXWELL, in a lecture lately delivered at the Royal Institution, asserted that the three primary colours are red, green, and blue; not red, yellow, and blue, as accepted by Dr. Brewster and others. These colours were exhibited by him on a screen by means of three lanterns, before which were placed glass troughs containing respectively sulpho-cyanide of iron, chloride of copper, and ammoniated copper. On mixing these colours he found yellow to be produced by the red and green, purple by red and blue, a pale pink by blue and yellow, and the three together produced white.

The professor advocated the theory of Dr. Young as to the perception of colour, who supposes that the eye is provided with three distinct sets of nervous fibres, each set extending over the whole sensitive surface of the eye. Each of these three systems of nerves, when excited, gives us a different sensation. One of them, which gives us the sensation we call red, is excited most by the red rays, but also by some others; another is acted on by the green rays and some others; while the third is acted on by the blue and violet rays. He stated that he had tested more than 100 different pigments and mixtures, and found the results agree with the theory of these three primaries in every case, and he had also examined all the colours of the spectrum, with the same result.

THE COLOURING MATTER OF LEAVES.

When leaves are extracted by alcohol, a green oil is obtained, which is called *chlorophyll*. Fremy has ascertained that this consists of a *blue* and a *yellow* principle, which he has succeeded in isolating. To the blue principle he has given the name *phyllocyanine*, and to the yellow the name *phylloxanthine*. Leaves which become yellow in autumn contain only the latter.

A NEW ARTIFICIAL LIGHT.

It is stated that Professor Bunsen has ascertained that the brightest artificial light known may be obtained by burning a piece of magnesium wire in the flame of a common spirit lamp. A wire fine enough to be wound on a cotton-reel thus heated will yield a light equal to seventy-four stearine candles, five in the pound. Its brilliancy is only 525 times less than that of the sun.

The cost of the wire is at present great; the price of a gramme thereof being nine shillings. Should it, however, come into use, doubtless other means to develop it will be discovered than at present exists, as has been the case with other rare metals.

THE VETERINARIAN, OCTOBER 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —Cicero.

NEW MODE OF CHEMICAL ANALYSIS.

In a previous number we adverted to the new mode of analysis introduced to the consideration of the scientific world by Professors Bunsen and Kirchhoff. We now purpose to give a brief account of it, assuming that its importance will be a sufficient reason for thus occupying our pages. We are aware that colours for the recognition of different substances have been objected to because some persons labour under a defect of vision, designated colour-blindness, but surely there is no validity whatever in this. Also, that as several bodies may be mixed together, each possessing its peculiar colour, by their admixture a difficulty in detection will present itself. Neither in this do we think there is much weight, as the analyst has, by its separation, to demonstrate the existence of a substance.

We need hardly add that our description of the method will, of necessity, be derived from the accounts which have appeared from time to time in the scientific journals of the day.

It may be safely said that Professors Bunsen and Kirchhoff, of Heidelburg, to whom modern chemistry is largely indebted, have lately made a discovery which, in the vast field it opens for further research, may be ranked as the most famous of the year. It is a method of chemical analysis by means of the spectrum. Most persons know that by spectrum is meant the rainbow-beam reflected from a glass prism exposed to sun light; it is producible also by the light of a lamp, and chemists and opticians have at times experimented on the changes that appear when different substances are burned within the lamp-flame. For delicate observations, it is essential that the spectrum be not too bright; much less bright, in fact, than that thrown by the solar beam; and Bunsen's lamp, which,

burning hydrogen gas, gives a feeble illumination with great heat, is the best for the purpose. Now, let us imagine the apparatus prepared, and the spectrum thrown into a box from which daylight is excluded. The professors above mentioned take less than a grain of chlorate of sodium, mix it with a small portion of milk-sugar, and burn it in a corner of their laboratory furthest from the lamp. An eye keeps watch on the inside of the box, and presently when the vapour has diffused itself, and meets the flame, a bright-yellow line is seen to cross the spectrum, and remain visible for some minutes. This is called the sodium line, for whenever sodium is present in the atmosphere of the lamp-flame, and however combined with other substances, that particular line never fails to appear, even if the quantity of sodium be not more than one twenty-millionth of a grain. It is found that each metallic base and metallic earth has its own peculiar line or lines: lithium shows a faint-yellow and sharp-red line; potassium, a red and a violet; strontium, four lines—two red, one orange, one blue; calcium, a green and an orange line; barium, more than a dozen lines, which may be described as one half green, the other orange. And as with the sodium, each substance is always recognisable by its own peculiar line or lines, however infinitesimal the quantity tested. In fact, it would appear that even the ultimate atom could hardly escape this mode of analysis.

While carrying on their experiments the professors noticed certain lines on the spectrum for which they could not account, produced by none of the substances enumerated above, but by some substance to them unknown. Considering hereupon, they ventured to assert that there existed in nature a fourth alkaline metal hitherto undiscovered.

To it the name of "cæsium," and of "spectrium," has been given (referred to by us at p. 22). It was found in the mineral waters of Kneuznach, the evaporation of twenty tons of which yielding, however, only 250 grains of the platinum salt of the metal.

Thames water, taken at low and high tide at Westminster Bridge, samples from the Chelsea and Lambeth Water Companies, from the New River, from the wells above the

London clay, from the sand above the chalk, and from the chalk, have also been submitted by A. and F. Dupré to this method of analysis, and in all cases lithium and strontium were detected by them.

It was the discovery of cæsium which gave at once such popularity to this mode of analysis, since which Professor Bunsen has announced the existence of a fifth metal belonging to the same group, called by him rubidium, and found, he says, in Durkheim, Kreusnach, and other mineral springs, in small, but in lepidolite in larger, quantities. Both these metals have a chemical similarity to potassium, differing, however, from it and each other in their degree of solubility of their double chlorides of platinum and potassium.

This spectrum analysis ought to have been noticed by us before, perhaps, but there has been such a press of matter as to preclude its insertion. Moreover, we have been desirous of watching its progress, and we find that it gains in strength and importance.

The experiments have been repeated before the members of the Royal Society, to their gratification. By means of it the presence of sodium has been detected in the atmosphere, which is supposed to be conveyed there by the evaporation of sea water in the form of chloride of sodium, and its use in the air has been conjectured to be that of an antiseptic. The existence of other metals has also been demonstrated by it, each giving its characteristic colour and bands to the spectrum. It has been averred that this exquisite mode of qualitative analysis can scarcely be overrated. It is founded, as already stated, on the power which certain substances possess of giving peculiar bright and coloured lines in the spectrum of a flame in which they are introduced, and these show themselves most plainly where the temperature of the flame is highest and its illuminating power least. By it the existence of certain bodies can be recognised with more certainty, greater quickness, and in far smaller quantities, than can be done by any other analytical method, and at the same time regardless of the nature of the substance with which the metals are combined. The authors say, "In spectrum analysis the coloured bands are unaffected by any alteration of

physical conditions, or by the presence of other bodies. The positions which the lines occupy in the spectrum indicate the existence of a chemical property as unalterable as the combining weights themselves, and may therefore be estimated with almost astronomical precision; it extends almost to infinity the limits within which the chemical characteristics of matter have hitherto been confined. By an application of the method to geological inquiries, the most valuable results may be expected; it opens out, moreover, the investigation of an entirely untrodden field, stretching even beyond the solar system, for in order to examine the composition of a luminous gas we require, according to this method, only to see it; and it is evident that the same mode of analysis must be applicable to the atmosphere of the sun and of the brighter fixed stars."

To give a proof of the extreme delicacy of this method we give the following extract:

"In a far corner of the experiment-room, the capacity of which was a little more than thirty-five feet, was burnt a mixture of three milligrammes (0·0462 gr.) of chlorate of sodium with milk sugar, whilst the non-luminous flame of the lamp was observed through the slit of the telescope. Within a few minutes the flame, which gradually became pale and yellow, gave a distinct yellow sodium line, coincident in the solar spectrum with Fraunhofer's dark line D, lasting for about ten minutes, and then entirely disappearing. From the weight of the sodium salt burnt, and the capacity of the room, it was calculated that in one part by weight of air, there was suspended less than $\frac{1}{20000000}$ of a part of soda smoke. As the reaction can be quite easily observed in one second, and as in this time the quantity of air which is heated to ignition by the flame could be calculated from the rate of issue, and from the composition of the gases of the flame, the surprising result came out that the eye is able to detect with the greatest ease quantities of sodium salt less than $\frac{1}{30000000}$ of a milligramme in weight. The reaction of *potassium* is not nearly so delicate; the spectrum contains only two characteristic lines, one in the uttermost *red*, and the other far in the *violet* ray of the solar spectrum—points at which the eye ceases to be sensitive to the rays. The presence, however, of $\frac{1}{1000}$ of a milligramme of the metal could be readily detected. *Lithium* gives two sharply defined lines—the one a very weak *yellow* line, and the other a bright *red* line, both towards the extreme red end of the solar spectrum; though the reaction is not so sensitive as with sodium, it is by far the most delicate test for the metal, the eye being capable of distinguishing with absolute certainty a quantity of car-

bonate of lithium less than $\frac{9}{10000000}$ of a milligramme in weight. The authors found to their surprise that lithium, instead of being a rare substance, was a very widely distributed one, occurring in almost all bodies. They found it in the water of the Atlantic; in the ashes of marine plants; in pure spring water; in the ashes of tobacco, vine leaves, and of grapes; and even in the milk of animals fed on crops growing in the Rhine plain, on a non-granite soil. *Strontium*, *barium*, and *calcium* all give characteristic spectra; that of *strontium* is characterised by the absence of *green* bands. It contains, however, eight remarkable ones, namely, six *red*, one *orange*, and one *blue* line. To examine the intensity of the reaction, Kirchhoff and Bunsen threw up into the air of the room, in the form of fine dust, 0·077 grm. of chloride, and thoroughly mixed the air by rapidly moving an umbrella; the lines immediately came out, and realised the presence of the $\frac{6}{100000}$ part of a milligramme of strontium. The *barium* spectrum is distinguished by two very distinct *green* lines, by which the authors were enabled to detect with certainty $\frac{1}{1000}$ of a milligramme of the metal. *Calcium* gives a broad and very characteristic *green* line, and, moreover, a bright *orange* line lying near the red end of the spectrum. $\frac{6}{10000000}$ of a milligramme of the chloride of the metal could be easily detected. It is particularly worthy of note that the spectra-reactions of different metals do not interfere with one another; that each being characterised by some one or more special lines, it is easy to make a qualitative analysis of a compound containing several elements; thus, Kirchhoff and Bunsen were enabled to exhibit the reactions of *potassium*, *sodium*, *lithium*, *calcium*, and *strontium*, in several mineral waters; to show the bands of *sodium*, *potassium*, *lithium*, and *calcium* in the ash of a cigar moistened with hydrochloric acid, and to point out differences in the composition of various limestones."

By means of this analysis Mr. W. Crookes, F.C.S., thinks that he has discovered a new element, which is probably of the sulphur group. He states that, with a view to ascertain if any tellurium existed in some seleniferous residues, he resorted to this method, and on introducing a portion of the residue into a gas-flame it gave abundant evidence of selenium; but as the alternate light and dark bands due to this element became fainter, and he was expecting the appearance of the somewhat similar, but closer, bands of tellurium, suddenly a *bright-green line* flashed into view and quickly disappeared. He adds, "I had become intimately acquainted with the appearance of most of the artificial spectra during many years' investigation, and had never before met with a similar line to this; and as, from the chemical processes through which this residue had passed, the elements which could possibly be present were limited

to few, it became of interest to discover which of them occasioned this green line. After numerous experiments, I have been led to the conclusion that it is caused by the presence of a *new element belonging to the sulphur group;* but, unfortunately, the quantity of material upon which I have been able to experiment has been so small that I hesitate to assert this positively. I am, however, at work upon some of the seleniferous deposit itself, and hope shortly to be able to speak more confidently upon this point, as well as to give some of its properties.

"In the purest state that I have as yet succeeded in obtaining this substance it communicates as definite a reaction to the flame as soda, the smallest trace introduced into the burner of the spectrum apparatus giving rise to a brilliant-green line, perfectly sharp and well-defined, upon a black ground, and almost rivalling the old line in brilliancy. It is not, however, very lasting, owing to its volatility, which is almost as great as that of selenium. A portion introduced at once into a flame merely shows the line as a brilliant flash, remaining only a fraction of a second; but if it be introduced into the flame gradually, the line continues present for a much longer time."

A number of experiments were instituted by Mr. Crookes to ascertain if, by possibility, any other element might have been mistaken for it; but he asserts that the reactions which took place were decided; and to remove any remaining doubt he specially examined the spectra produced by each element in detail, either in its elementary state or most important compounds. Many of them gave rise to spectra of great and characteristic beauty, but none gave anything like the green line, nor, in fact, is there any artificial spectrum, except that of sodium, which equals it in simplicity.

He goes on to say, "There still may be urged the possibility of its being a compound of two or more known elements, or an allotropic condition of one of them; a moment's thought will, however, show that neither of these hypotheses is tenable. They would, in reality, prove what they are raised to oppose, for nothing less could follow than

a veritable transmutation of one body into another, and a consequent annihilation of all the groundwork upon which modern science is based. If an element can be so changed as to have totally different chemical reactions, and to have the spectrum of its incandescent vapour (which is, *par excellence*, an elementary property) altered to an appearance totally unlike that given by its former self, it must have been changed into something which it originally was not."

This subject is so full of interest, and withal so important, that we may be tempted hereafter to resume its consideration. For the present we have been contented simply to direct our readers' attention to it, and to give them an outline of the method, which, perhaps, we might have been expected to have done before, but we have already assigned a reason why it has been delayed.

THE OPENING OF THE SCHOLASTIC SESSION AT THE ROYAL VETERINARY COLLEGE.

It will be seen by the advertisement on the cover that the sessional course of lectures commences at our Alma Mater on the 7th inst. We advert to it, because it is always gratifying to meet at the introductory discourse—which is this year to be delivered by Assistant-Professor Varnell, whose contributions to this Journal our readers are familiar with—so many of those who were once students at that establishment. While their presence cheers and stimulates those who are entering upon their more arduous and responsible duties, it also gives an assurance of the existence of a kind and friendly feeling, one which ever should obtain among the members of a profession. These recurring periods, therefore, have our hearty and sincere approval. We shall be delighted to record in our next number that as full and as interesting a meeting as in years gone by took place; nor do we entertain any doubt but this will be our

pleasing task. We therefore with confidence leave the subject.

Made bold by our experience, and a desire for the continued advancement of the profession, we will, however, venture to add a few words of advice to the students, and they shall be but few, as we do not wish to anticipate and by so doing to lessen the force of what will fall from their teacher's lips, albeit of this we feel assured, in our sentiments we shall agree.

It will be your duty, dear sirs, to make the acquirement of a knowledge of the principles of the science you are about to enter upon your unremitting study. Early and late should these be sought by you. Eschew the useless and now happily almost obsolete custom of learning how to treat diseases by receipts. Study symptoms; carefully watch the progress of a malady, and be ever on the alert to detect nature's deviations. Let all facts of any worth be indelibly impressed on the mind; and to effect this, let them be recorded by you. Our greatest men have not hesitated to do so, for although "memory loves to be trusted," she at times needs to be assisted.

Your work is before you, and you must by labour acquire knowledge; which, indeed, is nothing-worth unless laboured for, since it is not abiding. The incentives thereto need not to be named by us. It is true that science should be loved and studied for its own sake, which is the highest and least selfish motive. It will be yours, however, to make it practically useful hereafter. You have, too, arrived at a time of life when you can estimate its value, and a noble emulative spirit will be awakened in you by it. Remember what the poet has said:

> "We live in deeds, not years; in thoughts, not breaths;
> In feelings, not in figures on a dial.
> We should count time by heart-throbs. He most lives
> Who thinks most—feels the noblest—acts the best."

Make, then, full use of your time, for "time is the stuff life is made of." Take industry for your motto, and swerve not from it. Be also methodical in what you do. Further,

that the mind may not become wearied and forgetful of what it has acquired, vary your subjects, giving to each a well-considered portion of your time. By so doing memory will be strengthened, and facts be almost unconsciously accumulated by you, hereafter to be turned to profitable account. Of Sir Isaac Newton it has been said, that even his recreation consisted in a variety of his studies. Titus like, let not a day pass without learning something new, or it will be "a day lost."

Above all, be not contented with a mere superficial acquaintance with your studies. Strive for the mastery in all things. Become familiar with the minutest details, for this will simplify that which is complex. Students are very apt hastily to pass over what may be considered elementary, thus disregarding principles, and forgetting that it is by these the mind becomes disciplined and strengthened so as to excel. Some few difficulties may present themselves at the first, but the power of labour will soon surmount them. Depend on it, ardent study is the inevitable condition of success. Repeated failures should only make you more determined. We are promised in the end to reap the reward, if we faint not. The most distinguished men have invariably been the most indefatigable labourers: place such before your minds as a stimulus to exertion. The celebrated John Hunter, who took a warm interest in the profession of veterinary medicine at its beginning, and carried out many of his experiments at the College, was a great genius, it is true, but he was also a most arduous labourer. Sir Charles Bell and Sir Astley Cooper, with many others whose names are intimately associated with your profession, and whose schools were open to its earlier members,—happily now no longer needed,—were all hard workers. It is true all men have not genius, which is defined by writers differently. Buffon says, "it is patience." Johnson defines it to be "a mind of large powers, accidentally determined in some particular direction." John Foster characteristically held it to be "the power of lighting one's own fire." But Carlyle says it "means transcendental capacity for taking trouble first of all." Here, then, in this last definition we

have a clue to the whole matter, for without labour there can be no hope of excelling, and genius would be of little value.

To methodical labour add perseverance, if you wish for ultimate success. To learn what this may accomplish go to the coral-reef, and watch the puny polyps ceaselessly at work there. Extremely minute is the particle of lime-salt from time to time deposited by them, yet at length barriers are raised preventing the incursions of the mighty ocean and defying the force of its waves. So, too, the bee unwearyingly gathers honey "from every opening flower," nor stays her labours till she has filled her waxen cells with the sweet secretion. We might also refer you to the chalk formation, consisting of mere infusorial remains, or that which at the present moment is taking place in the vast Pacific and other seas, the continual falling to the bottom of showers of microscopic shells, forming a layer there to be upheaved at some far distant period in the world's history, to excite men's wonder and surprise and to call forth dubious explanations of the cause. In nature there is no stagnation nor waste of time; all is ceaseless motion; work is everywhere. And here we stop,—although it would be easy to go on,—leaving much that might be said to be better said by another. We will make one quotation, which can be advantageously and easily applied by you. "It is your duty to work—a duty you owe to yourselves, to your friends, to your school, to the profession, and to your patients. In no quality of the mind do men differ from each other so remarkably as in what is termed the power of the will, and in the relation which it bears to the passions and emotions by the presidence of the will. As man is especially distinguished from the animal below him, so in the degree of development do not men vary more widely than in their intellectual endowments, properly so called. Thus, to refer again to the example of men who had accomplished some great purpose in life, it was seen that, although such men had been by no means invariably distinguished by genius, yet that they had all been remarkable for strength of will. In such the will was dominant, subjecting and controlling the passions and instincts. Thus they were

distinguished, not so generally by intellectual wealth as by the earnest and substantial application of the powers at their command. On the other hand, what pitiable spectacles had been presented by the grandest intellectual powers when accompanied by what Coleridge in his wretchedness described as 'impotence of the volition.' Truly, there was no slavery so abject as that which sprung from want of self-control, no victory so fruitful as that we achieve over ourselves. Thus those who had been great, who had been successful in accomplishing some high and noble purpose in life, had been remarkable for character rather than intellect. This distinction was an important one. The latter might accomplish great things, but it was the former which secured success in life. Men differed in ability, but infinitely more in conduct, and they were not responsible for the powers they possessed, but for the use they made of the powers at their command."

Lastly, we would say, if you wish to make progress and be esteemed for your work's sake, you must not be a laggard, but—

> "Once
> Begun, work then all things into the work,
> And set thyself about it as the sea
> About the earth, lashing it day and night."

It has been well remarked that idleness is hard work for those who are not used to it, and dull work for those who are. Nothing is so hard to do as to do nothing. Further, that the human mind is like the stones of a mill: if you put corn between them, they grind it and make it into flour; but if you put none, they keep turning till they grind themselves away. Newton, whose mind was very comprehensive, so that, perhaps, it took in as much of the universe as that of any man of modern times, compared himself, after his greatest discoveries, to a child gathering shells on the margin of the ocean. He saw before him the multitudinous waves, but whither they extended or what they covered he could not tell.

Extracts from British and Foreign Journals.

THE HOME FOR LOST DOGS.

In one of the leading periodicals we have met with the following from the pen of Mr. W. Kidd, whose name is well known in connexion with natural history and love of animals:

It says little for our character as a "civilised" people, that there should exist among us a "Royal Society for the Prevention of Cruelty to Animals," and that the said society, through its active officers and numerous friends, should be unceasingly at work in all parts of the country. Our magistrates, too—how many acts of savage cruelty they have to deal with, almost daily. It is a sad proof of the perversion of God's gifts to man—this want of common feeling; but I would fain hope that much of it results from a want of thought. Of one thing there can be no doubt: too many of our children are systematically educated in the common belief that the (so called) lower world of animals were created solely for the use and pleasure of man, and that their happiness is a matter of no moment.

Young people should be induced to read or to enter into the spirit of those sweet lines of Cowper:

> "That heart is hard in nature, and unfit
> For human fellowship, as being void
> Of sympathy, and therefore dead alike
> To love and friendship both, which is not pleased
> With sight of animals *enjoying* life,
> Nor feel *their* happiness augment *his own*."

If parents were to teach their children, at an early age, to love such sentiments as these, we should not find so many birds robbed of their eggs and their young, flies and other insects deprived of their wings, and every little creature that has life considered to be an object of fair sport. But I am not going to deliver a general lecture on humanity to animals; my object is merely to direct attention to a special mode of kindly action in their behalf.

It cannot have escaped observation that large numbers of dogs of every conceivable variety and pattern are wandering all over London from day to day. People must have noticed, too, that nearly all of them have deflected tails, telling too plainly of their dejected spirit. These poor wanderers are, for the most part, homeless, and in a state of semi-starvation.

Many of them get run over, and otherwise severely injured from time to time, yet nobody is found to offer them a shelter. To add to their misery, no benevolent person has hitherto been able to prevail on parishes to furnish troughs containing water for ther use, in public thoroughfares. And yet nothing is more easily done. At the base of every "drinking fountain" might be left an opening to contain waste water enough to supply all possible canine demands. There would then be no necessity for issuing official orders to destroy "mad dogs." All the dogs want is—water. But as this is denied them, they go mad. Every parish ought to be held responsible for the consequences of neglect in this matter. The evil would then soon cure itself.

If any persons feel interested—and every kind-hearted person ought to feel interested—in the matter under discussion, let them listen some morning, whilst on their way hither and thither, to the conventional cry of "dogs' meat!" At the sound of the great man's voice, they will see dogs of all kinds and conditions suddenly appear. Where they come from is a mystery—nobody knows. Where they go to is equally mysterious—nobody cares. They always do appear; always come to smell the savoury meat; always get a kick (or two); always linger in the distance, and finally vanish. That "last fond look"—have you ever seen it, gentle reader? I have. Only a few days since, I heard the well-known cry of "dogs' meat!" I raised my office window and looked out. Below I saw—oh! such an original dog among the nondescript group. He was a compound of all sorts of dogs, finished up behind with a tail like the "brush" of a fox. His legs—I imagine they *were* legs—hardly exceeded in length some two inches, while his body was unduly long. There he stood. The "last fond look" was on. The sight was overpowering. "Give him," shouted I, to the man, "a penn'orth—all to himself." Amazed, the man of meat, evidently unused to this sort of thing, did as he was told, and poor doggie went to work with a hearty goodwill and no ceremony. He had earned his breakfast. He had often smelt it. Little did he ever expect to *taste* it. May my example add largely to the future consumption of dogs' meat! It is a gratifying treat to assist in feeding a starving dog.

Let the words I have just written introduce us at once to the "HOME FOR LOST AND STARVING DOGS." When this benevolent institution was first established (October 1860), nearly everybody made fun of it. "Dogs, indeed!" cried one; "what a shame to waste money in this way!" The press led the way—the people followed in the outcry.

However, it was a woman who had projected the institution. She persevered, took all opposition and ridicule in good part, and (of course) finally triumphed. The "Home for Lost and Starving Dogs," at Holloway, is now a permanent London Institution.

The very amiable lady who originated the "Home" resides at Holloway. Her name is Mrs. Tealby—all honour to the name! She took for her motto, "I cannot understand that morality which excludes animals from human sympathy, or releases man from the debt and obligation he owes to them."

At first, a few stray dogs only where taken in, and kindly befriended in the lady's own private dwelling. Presently, as numbers increased, a gentle local agitation was got up, and the sphere of the charity became greatly enlarged. It is now no hole-and-corner institution, managed by one or two amiable enthusiasts, in a back, suburban street. It numbers four lady patronesses, three of them ladies of title; it has a committee of seven ladies and four gentlemen, and its honorary secretary is a clergyman. The object of the "Home" will be seen by an extract from its address:

"Persons walking through the streets of London, or of its suburbs, can hardly fail frequently to have seen lost dogs in a most emaciated and even dying state from starvation.

"The committee would willingly hope and believe that no one who is capable of appreciating the faithful, affectionate, and devoted nature of the dog, can have seen any of these intelligent creatures in that state without feeling an earnest wish that there were some means established for rescuing them from so dreadful a death, and restoring them to usefulness.

"The object of this institution is to give humane persons an opportunity to relieve so much misery.

"The parent 'Home' is now established in Holloway, and all persons finding dogs in the state above described are entreated to convey them to it; and all persons losing dogs are requested to apply at once to 14, Hollingsworth Street, St. James's Road, Holloway." As the funds will admit, receiving houses will be established in all parts of London, from which the dogs will be conveyed to Holloway."

It will be readily perceived that this charity is founded on a sound principle. It begins exactly where the "Society for the Prevention of Cruelty to Animals" leaves off; and I am glad to record the fact of the two institutions being in strict unity and fellowship. All arrangements are of the most complete kind. A man is engaged to take charge of the animals,

to answer the questions of applicants who bring dogs or claim them, and to keep the necessary record of in-comers and out-goers. When a dog becomes a member of this happy family, he is named; and this name, and his breed (if ascertainable!), are entered in a book under a particular number. A tin ticket, with a corresponding number, is then hung round his neck, and he is provided with a place in a certain trough, basket, box, cage, or tub, according to his temper and his bodily health.

Of course, in such a motley assemblage, there must be dogs of all sorts, tempers, and dispositions. But they are neither better nor worse than human beings under similar circumstances. They are dirty, and want scrubbing and scouring. They are diseased, and want curing. If curable, they are cured; if not, they are humanely killed out of the way. Hungry, too, are they—very; and it would seem as if the ugliest and least valuable had the most voracious appetites. How they gorge! I was greatly amused, as well as pleased, to mark the good temper of the man who has so much to put up with from these "ugly customers." He has a name for each, and he manages them excellently well. When the "roughs" begin to howl and yell, the sight of a certain stick, professionally flourished high in air, silences them presently. I am happy to say that a large number of dogs have, up to this time, been admitted, a large number of subscribers obtained, and much real good effected. Still, however, funds are necessarily much wanted. It must be remembered that no dogs are *sold*. They are nominally "given away" to any person who will drop a fair gratuity into the Dogs' Box. And, as to a choice of dogs, *everybody* can get suited. A peep at "the Book" will proclaim them to be of infinite variety. Heads are there of all sizes and all shapes, noses of all forms and colours, some dogs *with* tails, and many without. Ask for what you will, the "Home" will produce it.

It would be occupying too much valuable space to go more largely into the details of this institution. Nor is it needful, as full particulars may be obtained at the "Home." That it "works" well is evident, and that it is calculated to awaken a feeling of benevolence cannot be doubted. Do not let it be imagined that every or any dirty little cur is indiscriminately to be admitted here, and kept in luxury. No! Morbid sympathy has no place in this establishment. Were it otherwise, there would be good grounds for cavil. I have seen here a number of very handsome and valuable dogs, suffering dreadfully from want or accident when first

admitted, but afterwards looking as well, as happy—ay, and as grateful—as dogs could look.

I have much pleasure in concluding this paper with a brief extract from a letter I received some time since from a very kind-hearted lady, who takes an active interest in the "Home." The writer says—"I happened to be at the 'Home' the other day, when a kind man brought in his arms a poor little Scotch terrier, whose feet were bleeding terribly. He had worn them to that state in his efforts to find his home, and at last sank exhausted on a gentleman's door-step. He was placed by a keeper in the pen, with plenty of straw and food. Next day, he was comparatively well, and jumped upon his benefactor with every demonstration of delight, fondness, and gratitude. He had not been in the 'Home' more than three days before he was claimed by a lady in the neighbourhood of Canonbury. This is one among the many instances of the good we may do, and the sufferings we may relieve, of these most intelligent and affectionate of God's creatures—creatures so dependent upon man that they cannot possibly, in large cities, support life without our help."

Then follows a detailed account of other particularly interesting matters, from which I select the following:—"There is yet another benefit arising from this charity, which you would not, perhaps, expect—the improvement in character of that much-abused race, the street boys. When our rules were first made, those best acquainted with the London world said, 'We must strictly avoid giving any "rewards" to those who brought dogs to the "Home." If not, we should do more harm than good, for even a few pence would induce boys to pick up and entrap the first animal they found without a protector.' There can, therefore, be no mercenary inducement in the case; *and yet we have had numbers of dogs, in various states of wretchedness, brought in by poor boys.*"

A variety of letters, equally interesting, have reached me from other kind and tender-hearted ladies attached to the "Home." I have perused them all with feelings of delight, and made their contents known far and near. Nor have I failed of securing "help" in certain quarters. But the institution requires constant aid, and I sincerely hope all readers of the *Leisure Hour* will assist in so good a cause. Pounds, shillings, and pence—*all* "tell." And only think of "the reward held out!" A sight of numberless happy (and funny) dogs, their funny (and happy) tails wagging in endless gratitude and glee for the liberality bestowed upon their ill-used race.

ON MEDICINAL ACONITINE AND ITS SUBSTITUTES.

By William Procter, Jun.

The high price and variable quality of aconitine has rendered its use as a medicinal agent so expensive and uncertain, that many physicians never employ it, depending upon the stronger tinctures of the root, in cases requiring the external use of aconite. In the manufacture of organic chemical products very much is added to their cost by the complications and loss rendered necessary or unavoidable in their purification from colouring matter or strongly adherent resinous or other inert substances in minute quantity, which, while their presence impairs the market value of the chemicals, often do not greatly reduce their medicinal power. In asking the attention of pharmaceutists to the following modification of Headland's process for aconitine, it is with the view of furnishing them with a practicable means of supplying their own wants in regard to this potent alkaloid.

It is proper to premise that aconite root contains a green fixed oil, solid below 70° Fahr., which it is important to remove entirely from the solution before attempting to extract the alkaloid by the agency of ether, a precaution only partially carried out in the published process of Dr. Headland. When a tincture of aconite root in alcohol of sp. gr. ·835, whether prepared in the cold by percolation or by digestion at the temperature of boiling alcohol, as recommended by Headland, is evaporated to one half the weight of the root treated, a quantity of the green, fatty oil above noticed separates and floats upon the surface of the liquid. Most of this may be strained out if the temperature is below 70° Fahr., but a portion, together with some resin, remains intimately combined in the clear liquid, and it is this which is not removed previously to adding the ammonia, in the process of Headland. Further, aconitic acid is soluble in ether, and aconitate of ammonia may be slightly so, in which case it also would tend to contaminate the aconitine in that process.

Take of aconite root, in fine powder, five pounds; alcohol sp. gr. ·835, ether and strong solution of ammonia, of each a sufficient quantity. Moisten the aconite root with two pints of alcohol, and let it stand twenty-four hours in a covered vessel, then, having packed it closely in a cylindrical percolator, pour on alcohol until three gallons have slowly passed, or until the root is so far exhausted that the passing liquid has little, if any, taste of aconite. To the tincture thus formed add an ounce of lime, previously hydrated and in powder, and agi-

tate them together, separate the precipitate which forms, by straining through a close cloth, and saturate the liquid with diluted sulphuric acid till slightly acid. Filter the liquid through a close filter, and distil off the alcohol, until the remaining liquid measures about a pint and a half. Remove any fixed oil which may separate on standing, and having continued the evaporation to a syrupy consistence, agitate it well with four fluid ounces of ether in a suitable bottle, and decant the ether when it has separated. Then add the solution of ammonia in excess, agitate thoroughly, wash the mixture with repeated portions of ether, by agitation and decantation, and having mixed these last ethereal liquids, allow the ether to evaporate spontaneously from a capsule, until the aconitine remains as a dry, amorphous, shining residue, which should be removed from the capsule, powdered, and preserved for use in a stoppered vial.

As thus obtained, aconitine is a powder of greenish or brownish-white colour, uncrystallised, very soluble in alcohol, ether, and chloroform, saturates acids, and has a strong alkaline reaction. It irritates the nose powerfully when a minute particle is inhaled, but does not excite sneezing.

Modes of using aconitine.—When aconitine is to be employed in the form of an ointment, its activity may be much increased by adding to it a sufficiency of acetic acid to salify it, which renders it more readily absorbable in contact with the skin. The powder should first be triturated with a few drops of alcohol, and the acid added to this, in the proportion of a drop of acetic acid to each grain of the alkaloid.

Glycerole.—When aconitine is mixed with a slight excess of acetic acid, it readily dissolves in glycerin, and in this state may be applied by friction to the surface requiring its anæsthetic action. The proportion of the alkaloid to each preparation must be regulated by the prescriber; two or three grains to the drachm of prepared lard is a maximum strength for the ointment, and from this down to one grain. —*The Chemical News.*

ON THE PREVENTION AND PRODUCTION OF MALARIA.

By Dr. R. Angus Smith.

A Paper read before the Manchester Literary and Philosophical Society.

"The author did not pretend to enter on the whole subject, but to give a few observations which he considered fitted for ts illustration. Malaria has unquestionably been proved to

be caused by the decomposition of organized bodies. If so, it must exist to some extent everywhere. By the mode of testing the air invented by the author, every place tried at home and abroad was found to have some oxidizable matter in it, although in some this was extremely small. In such cases the matter was probably oxidized to a state in which it would be innocuous. This oxidizable matter no doubt arises, in a great measure, from vegetation. Vegetation does not merely grow; it dies. This death may be caused by various circumstances, but two conditions are remarkable, one where the agents are animals, and the other where the agents are chemical. Animal life may act in various amounts on vegetation in the soil, from the large vermin to the microscopic classes. These do not prevent chemical action; on the contrary, it is probable that they further it exceedingly. Decomposition goes on in the soil at various rates, and in various ways. In a rich, highly manured soil, kept warm, the soil will be found alkaline. Soils generally are acid. The author has shown in a paper, read in 1847, that in an alkaline, peaty district, cold weather produced acidity in a few days. It would appear as if the acids of the mould (so elaborately described by Mulder) were incapable of further decomposition in the cold, and where thus retained and increased. Our great struggle with the soil is to produce alkalinity, or at least to diminish acidity, and where most acids exist we use most lime. Where most alkali exists there is a greater facility for the escape of vapours such as we suppose to be hurtful. So far as the vapours of putrid substances have been examined by the author, they have shown indications of containing substances composed somewhat like protein, at least the carbon and nitrogen have had relations to each other similar, or nearly identical with those found in protein, and formed the mass of the substance.

"The extreme condition of putrescence may be very readily produced in a soil by artificial means; the use of a little ammonia, for example, more than vegetation will bear. The substances putrefy until the whole becomes fetid in the highest degree. We have then a soil rich in organic matter and undrained. It is a swamp of the worst form, if the soil be not very poor; worse, perhaps, than was ever seen in nature. Such a soil would bring death everywhere. It is artificial malaria. We can, then, produce malaria from the soil by fostering some of its tendencies; and we see by the rapid acidification of the soil, in colder weather, why malaria is diminished by a lower temperature.

"As we can imitate malaria of some kinds, so can we also

imitate the methods by which nature prevents it. The warm alkaline soil, moistened, and washed with air and water, becomes acid, it sends forth less volatile matter—decomposition is stopped to a great extent, the matter is preserved. Cold prevents the action, drainage assists oxidation by a more active state of soil. By these modes and others the soil is disinfected by nature; when these do not act sufficiently, we may use disinfecting agents. By their means decomposition may be interrupted without fear of diminishing the power of the plant to take up food. By the use of disinfecting agents, Mr. McDougall had been able to feed sheep and cattle, and retain them in health, on meadows constantly wet by irrigation with liquid manure. The disinfectant used is from the products of the distillation of tar, and the amount required is small. Animal life is rapidly destroyed by it, and chemical decomposition is stayed. All climates can furnish this, where coal lies or where trees grow.

"It would be possible to irrigate great districts at a very small expense. The result would be as certain on a large scale as on a small one; and it is probable that, in some cases one or two applications would be sufficient, for a long period at least. By the new state of things, destructive insects would also be destroyed. Although, according to Dr. McCulloch, there are many parts of our own islands infected by malaria, most, if not all, can be cured by good attention to well-known agricultural maxims. This new method is especially applicable to other countries, and to more violent stages of the disease. The author hopes to have it tried on extensive districts in Italy. The method arose out of an advice everywhere neglected, but still cherished as true, to disinfect whole cities by beginning with the sewers, the origin and reservoir of all the mischief.

"The author believes that he has shown that decomposition, to a most pernicious extent, is possible in soils; that this is not a mere opinion, but a fact readily demonstrated; but that decomposition may be arrested artificially to the preservation of health without the destruction of vegetation, and that in these facts we have not only a surer basis in our reasonings on the origin of malaria, but an almost certain process for its ultimate and total extermination."—*Chemical News.*

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Annales de Médecine Vétérinaire, Bruxelles, Aug., 1861.

SACCHARINE DIABETES IN DOMESTIC ANIMALS, CONSIDERING THE RELATION OF THIS MALADY WITH THE AFFECTION OF THE NERVOUS SYSTEM AND THE RE-ABSORPTION OF FAT.

By M. Thiernesse, Member of the Royal Academy of Medicine.

The existence of sugar in the urine of animals affected with diabetes has not been acknowledged by veterinary surgeons up to the present time. The belief, indeed, was that this affection exclusively belonged to the human species. The form of diabetes which had been observed and described by the different veterinary authors was only a superabundant secretion of urine, for which ought to be substituted the name of polyuria, and it was thought that the term diabetes should be erased from the veterinary nosology. But we must pause when we find that M. Leblanc, member of the Imperial Academy of France, has described two cases in the *Clinique Vétérinaire* in which sugar was found in the urine. One was a greyhound bitch, the other a monkey.

At the time when the notice of these interesting facts first appeared in print another case of this malady was observed by the author, in which a bitch belonging to an eminent artist of Brussels was affected with the disease, diabetes, in a high degree. But before describing this case the author deems it necessary to give a summary account of the labours of his eminent colleague in Paris. The first case occurred in a greyhound bitch of large size, age from six to seven years, which was fed exclusively on raw beef, and had always been in good health. But in April, 1849, she appeared to be unwell, urinated frequently and copiously, also drank a great deal, and became emaciated in spite of the large quantity of raw beef she consumed. M. Leblanc put the animal under a treatment which at first seemed beneficial, but it was soon found to be impotent; indeed, the patient gradually became worse. It was only towards the month of

June that M. Leblanc was aware that he had to deal with a case of glucosuria. The dog began to cough, and became very weak, when its mistress, remembering that a person of her acquaintance had died of diabetes, wanted to know whether the dog was not suffering from the same disease. Putting her finger, which she had dipped in the animal's urine, to her tongue, she easily recognised the sweet taste of sugar. This she at once communicated to M. Leblanc, who, after having ascertained its correctness, collected a sufficient quantity of urine from the patient in order to test whether it really contained glucose. The reaction, according to Barreswill, led him to believe that it existed in a large quantity, but no other analysis was resorted to. However, having now a clue to the disease he had to treat, M. Leblanc employed the means that are adopted for the human subject under similar circumstances, but without any favorable result. The malady became more and more aggravated, and the animal died at the end of July.

Unfortunately, no autopsy could be made, and this case therefore remains incomplete. It is, notwithstanding, one of great interest. The dog, the subject of it, had been fed all its life on raw meat; but M. Leblanc rightly remarks that glucosuria does not necessarily result from the diet, and that, contrary to what has been advanced by authors, farinaceous food is not absolutely necessary for the formation of glucose in the animal system, and its elimination by the kidneys.

The second case of M. Leblanc occurred in a monkey, which had been fed on various substances, such as bread, biscuits, vegetables, broth, milk, meat, and confectionary. This time, the author says, "I could positively affirm that the urine of this animal contained a large quantity of sugar, as it was proved by repeated analysation by M. Poggiale."

The medical treatment in this case also was unfavorable, and the animal died in the country, where the proprietor had taken him, after a lingering illness of seven months; consequently in this case also no autopsy was made.

The case that occurred under the observation of Professor Thiernesse was that of a bitch, of small size, fifteen years old. Having come into the possession of her owner when three years old, he consequently had her twelve years. At the beginning of April last she was taken ill. The information obtained by M. Thiernesse, on his first visit, was that the dog had been affected a few days previously with a considerable flow of urine and frequent emission of the same; that she was very thirsty, and would drink about every quarter of an hour, even during the night; that she was

lazy, mounted the stairs with difficulty, and the least exercise made her faint. She was fat, and, though somewhat oppressed, was still lively; she had never been tied up, but allowed to roam about the house as she liked, was seldom taken out of doors, and had no other exercise than what she obtained by running up and down stairs. She was fed on a mixture of bread and cooked meat, was not allowed soup, fat, or milk, and never had been ill before.

As the dog was very old, no medical treatment was recommended, but the owner was advised to feed her on animal diet. Some of the urine was collected, and M. Dewilde, *répétiteur* of chemistry and physics at the veterinary school, was kind enough to undertake the analysation of it. In the first place, he ascertained that its contents were not albumen, but a large amount of glucose. After this the process of Trommer, modified by Barreswill, was employed by M. Dewilde. He removed all organic matters from the urine,—which in some instances are apt to give a glucose reaction on the addition of tartrate of copper and potass,—this elimination of organic matter being effected by means of the acetate of lead, which precipitates it, and afterwards by carbonate of potass, which throws down the excess of lead, and after having weighed a definite quantity of the urine so treated, washed and filtered it, it was concentrated by evaporation in the water bath until reduced to one fourth its volume. This, of course, contained all the sugar in the quantity of urine which had been submitted to analysis. The liquor was afterwards treated with the reagents proposed by Barreswill until it ceased to become discoloured. This mode by Barreswill has been often questioned, but, setting aside the colour process, it is still the one which gives the most correct results, and has received the approbation of most distinguished chemists. The presence of glucose in this urine was so evident, that on heating the residue after evaporation the characteristic odour of caramel was obtained.

The patient now declined rapidly, although she still fed and consumed a large quantity of meat. She became duller, weaker, and more oppressed, and everything seemed to presage a speedy dissolution. In the beginning of June there took place a frequent discharge from the mouth and the vulva of bloody mucus; the fæces, which were sometimes soft, at others hard, were also covered with the same; and on the 18th of June she was seized with convulsions and died.

The *post-mortem* examination was made the next day.

Nothing remarkable was perceived to exist on the exterior of the body except atrophy of the mammary glands, which, on closer examination, were found to contain pus of a bloody character; the gastro-intestinal tube presented no lesions of any imporance, only there were a few ecchymosic spots on the small intestines, and some erosions on the glands of Peyer. There was considerable hypertrophy of the liver, and it was also of a yellow colour, owing to the great quantity of fat which pervaded it, and which occupied the whole interstitial tissue, distending it, and thus rendering it easy to circumscribe the hepatic lobules, which can hardly be distinguished in their normal state, from their being then so closely pressed together. The microscopic examination enabled the author to verify that such was the seat of the fatty deposit. There were, however, cells of the glandular tissue which were also filled with it, so as not to be able to perceive the nucleus, but the majority of them contained only a small proportion, in the form of minute drops, which occupied the place of the amyloid granules, amongst which the nuclei could be clearly distinguished. On the surface of the liver were small tumours; in some places they were of the size of a large hazel-nut; their rough surface gave them the appearance of being cancerous, but the microscopic examination showed that they were composed of fatty matter. The spleen was perfectly healthy, and nothing abnormal was perceived to exist in the pancreas or the salivary glands. The bladder was very much contracted and almost empty, the kidneys were hypertrophied and of a yellow colour, and, like the liver, they were affected with stearosis. On dividing them into halves they presented the same colour, and one could clearly distinguish the pyramids of Ferrin, or the facets of the pyramids of Malpighi, and also the fasciculi of the uriniferi of which these are composed. The tissue which unites them was filled with stearine, which was easily verified by the microscope. The uriniferous tubes were atrophied, but the epithelial cells contained no fatty matter. The ovaries were considerably atrophied, their surface was granulated and yellowish; the follicles of Graaf had disappeared, and they contained a quantity of fatty matter. In one horn of the uterus, about its middle, was a soft, non-pedunculated tumour, about the size of an egg. This was mistaken for a cyst, but on opening it it was found to communicate with the uterus, and to be only an accidental dilatation of the part. The mucous membrane lining it was red, granular, and covered with bloody mucus of the same nature as that which was discharged from the mouth and

vulva a few days before death. The like was also found in the other parts of this viscera. By the microscope it was seen to be composed of globules of blood, small particles of fat, and nucleated cells, resembling a mixture of pus and mucus, and depending, no doubt, on the secretion of these two substances. On the internal surface of the uterus, near its neck, were observed a great number of vesicles, transparent, and of various sizes. These contained a serous liquid, which held in suspension fat and globules of pus or mucus. They were the follicles of Naboth, more or less degenerated. The lungs were congested and somewhat œdematous. One of the kidneys, part of the spleen, some blood from the heart and the jugular vein, the bladder, which contained very little urine, and the liver, were all analysed by M. Dewilde, who found the latter organ only to contain traces of saccharine matter.

After having ascertained these facts, the author deemed it important to examine the cerebro-rachidian apparatus; physiologists and medical practitioners having stated that a sort of correlation obtains between alterations of the different parts of the nervous system, especially the medulla oblongata, and glucosuria. The cranium and the whole extent of the spinal canal were laid open with great care, without the least derangement of the dura mater taking place, and the whole of the nervous cord was carefully dissected in the presence of MM. Dewilde and Derache, who acknowledged with the author that the whole of it was normal, both in consistence and colour. The only thing visible was a slight injection of the pia mater, the result of the sanguineous stagnation in the veins at the moment of death. One organ only had undergone some alteration, namely, the pituitary gland, fatty matter being found in its tissue, which was also softened. This cerebral alteration induced the author to examine other vascular glands, which he would otherwise have forgotten, when he found that the thyroid glands presented some yellow spots on their surface, which were entirely formed by fatty matter; and the lymphatic glands of the mesentery were also hypertrophied and somewhat fatty.

These necroscopic details resolve themselves into two important facts, viz., the complete stearosis of the liver and the kidneys, the incomplete or partial stearosis of several other organs, and the absence of lesions in the cephalo-rachidian apparatus in this diabetic patient. This last fact (the integrity of the cerebro-spinal axis) seems so much more worthy of notice inasmuch as medical men are disposed to attribute glucosuria to lesions either of the medulla oblongata

or some other part of the encephalo-rachidian apparatus, and more so since M. Claude Bernard has seen this modification in the secretion of urine follow after a small puncture of the fourth ventricle of the brain. It was in 1857 that this learned physiologist made the following observation. If you puncture, he says, the fourth ventricle, at the origin of the pneumogastric nerve, the secretion of sugar (in the liver) increases very much; the blood also contains a greater proportion, and the urine is charged with it; at the same time the abdominal circulation is increased. If you puncture the spinal marrow a little below the phrenic nerve, the contrary phenomenon is observed. The urine contains no sugar, and even more, it is not found in the liver three hours after the puncture has been made. In 1858 M. Leudet presented to the Biological Society—the same to which M. Claude Bernard had communicated his discovery—an interesting memoir, which contains a great number of clinical facts that demonstrate the influence of cerebral maladies in the production of saccharine diabetes, and where afterwards are recorded those analogous facts observed by Dr. Golding Bird, Physician to Guy's Hospital in London. He also mentions in this memoir the labours of M. Blot on the temporary glucosuria of wet-nurses, likewise those recorded by Dr. Bence Jones on the frequency of this disease, though slight, in old age; and others more or less based on the same theoretic views, according to which convulsions, and especially epilepsy, may occasion a temporary attack of diabetes. These facts have been contested, although some of the clinical observations of M. Leudet tend to prove their accuracy. The conclusions that M. Leudet draws from his memoir are—1st. The cause of diabetes, in certain cases, is from some organic alteration in the brain. 2nd. The *début* of glucosuria may coincide with the malady of the brain, or be consequent on it. 3rd. Convulsive cerebral affections seem to be particularly accompanied by glucosuria. 4th. Diabetes may only be temporary, and manifest itself with the cerebral affection and disappear with it.

Other observations have been published relative to glucosuria depending on organic lesions or functional derangements of the cerebro-spinal organs; and amongst these the memoir of Professor Schiff, of Berne, which was approved of by the Academy of Sciences at Copenhagen, in 1859, seems to be most worthy of attention. By means of many experiments, this physiologist confirms the theory of Claude Bernard as to the existence of the amyloid granulation in the hepatic cells, and their transformation into sugar under the influence of a certain ferment existing in the blood; and he demonstrates

afterwards that the sugar in the urine in diabetes comes from the liver, where it is formed in greater quantity in consequence of a sanguineous congestion of this organ, either natural or provoked by some lesion, not of the medulla oblongata only, according to Claude Bernard, but also of different parts of the spinal marrow or the brain itself.

The author further adds, that MM. Luys and Dumontpallier have communicated to the Biological Society, at the *séance* of February, 1861, some fresh pathological cases, which tend to prove that glucosuria is the result of an alteration in the medulla oblongata; they having observed the intense yellow, chamois-like tinge in the fourth ventricle, and the fatty degeneration of the nervous cells in the brain of persons who have died of diabetes.

The author does not think it necessary to carry out these quotations relative to the connexion of diabetes with the affection of the nervous system any further. It must be borne in mind that in the case of the bitch there was not the slightest derangement in the function of the nervous system, and that on the autopsy the encephalo-rachidian axis was found to be perfectly healthy. The result is, that if glucosuria often coexists with lesions in the nervous centre, and appears even, as in the case of artificial diabetes, to depend entirely on it, yet this disease may also exist independent of any nervous affection. On the other hand, the liver was found to be completely stearosed in this case, and containing, at least after death, only some traces of glucose.

An able experimenter, M. Bolin, of the Veterinary School at Alfort, has presented to the Academy of Sciences of Paris, at its sitting 5th of November, 1860, a memoir on the production of sugar connected with the re-absorption of fat and the production of animal heat, in which he concludes that the re-absorption or the combustion of fat, the production of sugar, and the maintaining of the animal heat at its ordinary standard, are phenomena intimately connected and depending on each other, and that the production of sugar is equal to the re-absorption of fat for which it is substituted. In the case of the bitch the kidneys secreted a large quantity of glucose, which probably did not come from the liver, as it seems to have been the case in the experiments of M. Shiff, for this organ contained hardly any after death, and it could not come from the fat, for the liver and kidneys were crammed with it, and still they contained no sugar after death.

From these approximations it may be seen that the case of glucosuria observed by Professor Thiernesse tends not only to show that animals are susceptible of being affected with

this malady as well as man, but also it is of great interest in a double point of view, inasmuch as it has been announced that saccharine diabetes either depends on an affection of the nervous system or the glucogenic function and the reabsorption of fat. With a view to elucidate these questions the author has instituted some experiments, the results of which, if worthy of the attention of the members of the Academy, he would be happy to lay before them at a future time. At the same time he thinks it necessary to announce to them that he has already had one animal under operation, viz., a dog, and, although old, he was in good health, the urine small in quantity and thick, but it contained evident traces of glucose before the experiment. On the 2d of this month, assisted by M. Derache, he made an opening in the cranium of this animal, through which he plunged a thick wire into one of the occipital lobes of the brain nearly to the hippocampi. Forty-eight hours after the animal was sacrificed, and the autopsy was made immediately afterwards, when most of the viscera were found healthy, and even the brain, except the part which had been penetrated by the wire. This was softened, and contained some extravasated blood. The liver was somewhat atrophied, and entirely stearosed; the kidneys presented, on their exterior, the usual normal appearance, but were found to be penetrated with fatty matter to about two thirds of their cortical substance. In their medullary substance there was no alteration. The blood, the urine, the liver, and the kidneys, were analysed by M. Dewilde, who found a notable quantity of glucose in the liver and urine, and only traces of it in the blood and kidneys. This fact agrees, the author states, with the observations which were communicated to the Academy in 1852, by M. Dechambre, relating to the presence of sugar in the urine of old people, and he shows in his observations that, as in the case of the bitch, and contrary to the opinion of M. Colin, the formation of glucose does not result from the reabsorption of fat, but that these two hydro-carbonaceous substances may appear at the same time in large quantities in the animal organism, being undoubtedly consequent on a more or less considerable weakening of the respiratory combustion in old age; the same as in certain maladies which have their seat in the lungs, or those parts which are intimately connected with them. Finally, as in the experiments of M. Reynoso, made with a view to produce the suspension or the suppression of hæmatose, by ætherization, asphyxia, submersion, &c., consequent upon which the urine has become saccharine.

The author had terminated his labours when, on the 5th

of July, 1861, one of the students, M. Leyder, of the clinic of the school, gave him a translation of a case of a horse sent to the Veterinary School of Dresden, suspected to be glandered. This horse was attacked while there with petechial fever, of which he died in a few days. Dr. Haubner, the author of this observation, which is inserted in the annual report for 1858 of the state of veterinary medicine in Saxony, had the urine of this patient repeatedly analysed by Professor Suszdorf, who ascertained that it contained a quantity of sugar, the same as in the diabetic urine of man. Dr. Haubner, who has the praiseworthy habit of having the urine of all the horses that are confided to his care analysed, says that glucose has never before been found in the urine of the horse, not even in that of those who were affected with polyuria or false diabetes.

The case of this horse, which was not diabetic, is therefore the first instance in which this professor has met with sugar in the urine. At the autopsy the author found fatty degeneration of the liver to exist.

ROYAL COLLEGE OF VETERINARY SURGEONS.

MEETING OF COUNCIL, HELD JULY 24, 1861.

PRESENT:— Messrs. Wilkinson, Aitkin, Lawson, Burley, Robinson, Withers, Mavor, Ernes, Jex, and Braby.

The President, F. R. SILVESTER, Esq., in the chair.

Previous to signing the minutes of the last meeting, considerable discussion took place on the following motion:

Moved by *Professor Spooner*, seconded by *Mr. Field*, "That the sum of £50 be paid to the late Secretary for the year ending 24th June, 1862, with a recommendation that it be granted annually."

Ultimately the minutes were signed by the chairman.

The quarterly balance-sheet was read, showing a balance at the bankers' of £659 19*s*. The report was received and adopted.

The report of the committee appointed to take into consideration the duties of, and the salary to be paid to, the Secretary, was read. It stated that the committee were of opinion that the Bye-Laws were sufficiently explicit as to the duties of Secretary, but suggested the following additions:

"That he be Secretary to the Board of Examiners.

"That he be Curator to the Museum.

"That he be Librarian and Registrar."

With reference to the salary, the committee is of opinion that the salary paid to the late Secretary was not extravagant, but they fear that the finances of the College will not admit of its continuance.

Mr. Wilkinson gave notice that he should move at the next meeting of Council, that Bye-Law 27 be suspended during the late examinations at Edinburgh, to legalize the same.

Mr. Robinson moved, and *Mr. Lawson* seconded, "That the appointing of a Secretary to the Royal College of Veterinary Surgeons be taken into consideration at the next meeting of Council, and that notice of such intention be advertised in the London and Edinburgh veterinary journals."

Mr. Ernes gave the following notice: "That at the next meeting of Council it be considered what are the best means to be adopted to protect the interests of the Veterinary profession."

MEETING OF THE WEST OF SCOTLAND VETERINARY ASSOCIATION.

The members of this society met in the Glasgow Institution Rooms, on Friday, the 13th September. In the absence of Mr. Steel, President, Mr. Dunlop, V.S., Calder Bank, occupied the chair. The Secretary read several letters of apology from absent members, stating their reasons for non-attendance.

Some conversation arose about the irregularity in attendance of the Glasgow veterinary surgeons, while many from a great distance were seldom absent.

The business of importance having been transacted, and Mr. Dickie, V.S., Toker, admitted a member, the chairman called upon Mr. Robert Lang, V.S., Bridge of Weir, to read his paper on the disease commonly called "black leg," which he did as follows:

Mr. President and Gentlemen,—Having been informed by the secretary of this society a few weeks ago that it was in accordance with its rules for every member in succession to bring forward his views concerning the nature, cause, and treatment of some disease affecting our domesticated animals, in order that knowledge might thereby be diffused amongst us and the sufferings of dumb animals allevi-

ated, I venture to bring before you a subject for consideration.

Much useful and valuable information has already been obtained by our meeting together and discussing matters of importance in connexion with our profession, and I hope that the disease which I have selected for consideration at this meeting may prove at least to be one of interest to all present. I know it is one of some importance to many veterinary surgeons, especially to those practising in country districts; but those located in towns and large cities, such as this, may perhaps feel uninterested, because it is seldom met with by them. The disease I refer to is very common in young stock in certain localities, and it makes its appearance at certain seasons of the year only. It is well known, however, in the district in which I reside, by the name of black leg. How it may have derived this name I know not, perhaps from the black and putrid appearance the part affected displays after death has terminated the animal's sufferings. Mr. Youatt, an excellent writer, mentions in his work on cattle, when speaking of this disease, that it is known by several names, such as black spauld, black quarter, shoot of blood, black leg, &c. These different names are of little moment to us, as they all refer to one and the same disease, existing in different localities.

It is this disease, then, we have to combat with, and I am sorry to add that the several cases which have come under my observation have terminated fatally. Some of my learned friends here may, perhaps, say, "I live in a large town, and my attention being wholly directed to horses, cases of this kind never occur in my practice. What have I to do with young cattle?" If these be the sentiments of any of the profession here, I would have them reflect that no society can exist and prosper, unless its members are unanimous in assisting each other; and I say boldly, it is the duty of every member of our profession, both here and elsewhere, to give this subject due consideration, unless he be so far advanced as to be able to boast of his cures, and then it is his bounden duty to make the means known to all.

We are all aware of the handsome prizes given by the Highland Agricultural Society, and other local societies, at their exhibitions, for the best Ayrshire stock; and how highly must that animal be prized by the agriculturist which has required so much care, attention, and expense in rearing it so as to be admired by all; and how proud does the stock-feeder feel at seeing so many of his young animals feeding and fattening so well; but alas! there is a check to

every excess, for, too often, this disease makes its appearance and selects for its prey the best and most thriving of the herd. It appears to prevail most commonly during the months of September, October, and November, although I have seen it in January and the spring months. I have also witnessed two cases of it during the last month, and neither of these animals was forward in condition, nor the pasture luxuriant. They also belonged to two separate farmers; one of them was a two-year old, and the other a one-year old animal. The general symptoms they exhibited were well marked, although I am aware that many feel it difficult to distinguish them; but having observed so many cases, in all stages of the disease, and differently attacked, I consider myself not presumptuous when I say that I can distinguish it easily. If at pasture, the animal affected generally separates himself from the rest of the herd, and appears dull and restless. If standing, all four legs are drawn together; the coat staring; the back arched; the eyes watery; the mouth hot, and often filled with a kind of frothy spume, which is sometimes seen dropping from the angle of the mouth; the extremities, such as the legs and ears, cold; the pulse varying from 70 to 80 or more; the breathing accelerated; rumination stayed. If the animal is down, she moans or grunts; sometimes the left side is a little enlarged, as if tympanitic; should the animal be put to where the others are grazing, it evinces no inclination to eat, but will "shy" off in another direction. Should you leave the animal in this stage, and examine it in a few hours afterwards, it will be found lying down, and often there will be a difficulty in raising it. When up, lameness either in the fore or hind leg will be observed, and should you examine the leg or quarter a swelling, very painful on pressure, will be observed to exist, and on drawing the hand over it, a crackling noise will be heard, as if air were contained within the cellular tissue, although I have often failed to detect this sound, in some cases, until near the termination of life. In some instances the lameness is also absent, but the animal is stiff and moans exceedingly, as if suffering internal pain.

I recollect being called to visit a sturk, nine or ten months old, on the 24th of January last, the property of Mrs. Lindsay, Coalboy. The animal was seemingly in good health on the previous evening, but in the morning it was discovered to be unwell. When I arrived I found the animal down, and experienced some difficulty in getting it up; the extremities were cold, pulse quick, breathing rapid; the near side of the face considerably swollen, tears were flowing freely from both eyes,

a watery secretion took place from the nostrils, and a frothy spume from the month, which it was difficult to open more than an inch wide; the near knee was also greatly swollen, the swelling extending upwards as far as the shoulder-joint.

Treatment.—I abstracted a small quantity of blood, administered an ounce of spirits of nitrous ether in a little gruel, and a short time after, gave a brisk purge of Epsom salts, combined with gentian and ginger; hot fomentations were applied to the affected part for some time, flannel bandages resorted to, and the animal kept warm. On my visit in the evening, about eight o'clock, I found it had partaken of a little bran and boiled turnips, had also drunk some gruel during the day; was now warm and cheerful, and it urinated in my presence. I then left. It was, however, found dead in the morning.

I made no *post-mortem* examination of this case, but was told by the butcher that it might have been eaten, with the exception of the head and near fore leg, which when cut into, were as "black as tar."

I will now relate another case, very similar to the former, with the exception of the head not being implicated in the disease. In February last I was requested by Mr. James Holmes, farmer, Nitshill, to visit an animal about the same age as the last. The farmer informed me that it had got suddenly lame of one fore leg, and his opinion was that it had sprained its shoulder, for that part was swollen and sore, and so painful was it that the animal would eat nothing. I asked when it had become lame? He replied it was out a little the day before, but he perceived nothing wrong until that day. On examination, all the symptoms above described could be traced, so I at once pronounced the case to be hopeless, having as yet discovered no remedy. However, at the owner's request, I abstracted blood, admininistered a stimulant, and afterwards gave a purge of salt and water, then applied to the affected part hot cloths; after a time rubbing it dry, and enveloped the animal with the exception of the head, in bags and blankets. It survived a day only.

On making a *post-mortem* examination and removing the skin, I found the fore quarter much affected, especially behind the elbow-joint, and over the greater part of the abdomen. On cutting into the diseased part it was very black; blood was effused between the muscular and cellular tissue; all the viscera, however, had a healthy appearance, except the lungs, which were black and the blood congested in them.

I had an opportunity of witnessing a two-year old animal

treated for this disease by a friend of mine. It was given a brisk purge, and then placed in a large horse-cooler, which was filled with water hot enough for the animal to bear, the heat being kept up for some time; afterwards it was removed to a stall, dried, and covered over with blankets and straw. Soon the animal became covered with a copious perspiration, the vapour rising from his body almost like mist. In this condition it was kept for some time, the blankets were then removed, and it was again rubbed dry and covered only with a moderate quantity of clothing. It, however, survived only two days.

The *post-mortem* appearances were the same as those described in the other case. As the time allowed me would fail to relate to you all the cases I have seen, I will pass on to the treatment I have generally adopted, but, unfortunately, without success. I do so with a hope that some one may be able to throw a little light on the subject. It may be summed up in a few words—bleeding, purging, stimulants, sedatives. At one time it was thought that a preventive was to abstract blood from all the young stock about the end of spring or beginning of May, previous to turning them to grass. I have observed, however, that those bled at this season fall victims to this malady about October or November, as easily as if blood had never been withdrawn from them.

Now, gentlemen, having been baffled by the various plans suggested by others, and adopted by myself, in the treatment of this disease, I beg to submit to your consideration the preventive I have resorted to for these two years past. I advise the owner to begin about the month of July or August, when the animals are getting forward in condition, to give the sturks about one drachm of tartarized antimony and two of nitrate of potash, once a fortnight, in a little water. The two-year olds get twice that quantity. Those persons who have not adopted this plan I recommend them to give it a trial. Perhaps they may find it necessary also to bleed and physic before commencing, that is, if the animals are in extraordinary good condition. I do not say that the disease will become unknown in your district by adopting my suggestion, but, speaking from experience, and, therefore, with confidence, I will affirm that fewer deaths will occur. If the grasses are luxuriant, and the animals in good condition, I advise barren pasture, so that they may have some exertion in procuring their food. In meadow lands, where the grass at this season of the year is luxuriant, and especially in wet seasons, the disease appears to prevail most; but, as already remarked, it does occur under varied circumstances.

I have never seen a case in a pregnant animal or after three years old; but possibly some of you may, which must be considered as exceptional.

I now beg, gentlemen, to draw my remarks to a close, and to thank you for the attention given me, hoping to be benefited by the observations that may be made by you in the discussion which is to follow.

The chairman, after expressing his opinion of what they had heard, called on the members to state theirs, when an animated discussion followed, taken part in especially by Messrs. Anderson, of Glasgow; Dobie, of Irrind; Blackie, of Belbshill; Robb, of Parkhead; Sharp, of Hamilton, and Pottie, of Renfrew.

A vote of thanks having been tendered to Mr. Lang for his valuable paper, the meeting terminated.

A. POTTIE, M.R.C.V.S., *Secretary*.

Reviews.

Quid sit pulchrum, quid turpe, quid utile, quid non.—HOR.

On the Disease of Sheep commonly known as Rot, Coathe, or Bane. By G. T. BROWN, M.R.C.V.S., pp. 37.

On Therapeutics. By G. T. BROWN, M.R.C.V.S., Professor of Veterinary Surgery at the Royal Agricultural College, Cirencester, pp. 90.

IT is praiseworthy and pleasant to see the members of our profession thus employing their pens for the benefit, more especially, of that section of the community with which we are most intimately connected. We much prefer this independent mode of acting to that of re-editing the works of those who were not scientifically acquainted with our art, and which contain a vast amount of useless and absurd matter, that has to be expunged so as to bring them up to the state of veterinary medicine at the present day.

The opinions of individuals are thus made known, and can be freely canvassed and tested. By it, also, the pro-

fession, as a whole, becomes advantaged and science advanced.

The former of these pamphlets is a reprint, by permission, from the *Bath and West of England Agricultural Journal*, and is illustrated by engravings of the liver-fluke (*distoma hepaticum*) in its various stages of development; considered the principal cause of the disease called rot, coathe, or bane, which during the past year has been singularly prevalent. Mr. Brown, however, is of opinion that they are not the sole and exclusive cause. He says—

In estimating the liver-fluke as the principal cause of the disease with which it is associated, the mind merely obeys its natural bias; any evidence to the contrary will, therefore, be met by an instinctive opposition. We ask, however, for a little forbearance while we advance the arguments on both sides.

In favour of the conclusion that flukes are the cause of the morbid changes, we have the fact of their presence frequently in large numbers in the livers of sheep affected with rot. In opposition to the conclusion, we have—

1st. The fact that they are found where no appearances of rot are seen during life, or after death.

2nd. The variation in point of number in similar cases of disease—sheep having died from rot with a dozen flukes in the liver, while in other cases hundreds are found.

3rd. Their presence is not necessary to the production of the changes observed. This position—of immense importance in the evidence—we had some years ago ample opportunity of verifying. A number of Southdown ewes were brought from a low and damp situation to the CollegeFarm on the Cotswolds. Shortly after their arrival, the symptoms of rot presented themselves; some of the animals died in a month or two; some lingered on through the lambing season; some were treated at the hospital; but eventually the whole number died at various times. All were submitted to a post-mortem examination, and in no instance were flukes found, notwithstanding all the other signs of rot were well defined. We do not care to contend merely for the application of the term "rot" to these cases; we quote them as proofs of the statement we have just made to the effect that the various morbid changes characteristic of the disease may occur unconnected with "flukes."

4th. They are never found in large numbers excepting in the advanced stages of the disease. If in the commencement they existed in abundance, there would be a presumption in favour of their having some influence in the production of the subsequent changes. Indeed, a large number of these animals could not exist in the biliary canals without interfering with the functions of the organ; but as they have not been found to precede but rather to follow the disease, the presumption is in favour of their being to a great extent the result of the derangement rather than its cause.

In fine, the weight of evidence seems to us so decidedly against the popular conviction, that we cannot consistently accept it. Allowing full force to the sole argument in favour of the belief, viz., admitting that flukes are invariably present in rot, it is not logical to conclude that therefore

they are causes rather than effects—the mere fact of their existence being equally in favour of either presumption.

In support of the opinion that flukes are not the essential cause of rot, the arguments may be concisely stated:

1st. Flukes do not occur in large numbers until the disease has made some progress.

2nd. The number is not invariably proportioned to the extent of the morbid changes.

3rd. Exactly similar, even identical, symptoms during life, and post-mortem appearances, have been found to exist unassociated with the presence of these parasites.

Flukes are found in the liver not only of the sheep, but also in other animals, without the concurrence of any symptoms of rot.

From the whole evidence we draw the following conclusions:

1. The fluke (*Distoma hepaticum*), while yet in one of its transition forms, is introduced into the organism of the higher animals.

2. In a healthy condition of the system only a few of the larvæ reach their full development.

3. When the animal infested is placed under circumstances which occasion derangement of the secretive functions, particularly of the liver, the "distoma brood" is favorably situated for attaining its final and mature state, and, by excessive accumulation, assists in the production of the organic changes associated with the advanced stages of rot.

He then considers the "causes acting from without," as want of drainage, and a luxuriant state of herbage, "such food being evidently unfit for alimentation, with its excess of fluid and deficiency of flesh- and fat-forming principles, not to speak of the highly stimulating ammoniacal compounds that are among its constituents." To this succeeds a consideration of the *treatment* and the *prevention* of rot.

The matter of the second pamphlet, 'On Therapeutics,' having appeared in the pages of this Journal, we are precluded from saying more respecting it than that we strongly commend it to the notice both of the practitioner and student of veterinary medicine, being assured that it is alone by the right application of principles in the use of remedies that disease can be removed, and we, as a body, become duly appreciated by the public. Gladly did we give insertion to the series of papers, the subject being one that had been too long neglected, and even now is not recognised as it deserves to be.

We should be pleased if another medicinal subject were taken up in like manner by Mr. Brown, or that others would follow his example. The desirableness of the thing cannot be questioned, taking a professional view of it, and we know there are those among us who are quite equal to the task.

A Few Plain Words about Horses. By R. H. Dyer, M.R.C.V.S., &c., Waterford.

This is a very small pamphlet, written by Mr. Dyer for gratuitous circulation, a copy of which may be obtained by forwarding a stamped and directed envelope to him.

Here, again, we have to commend a member of the profession, to the negation of self, aiding in the diffusion of right principles and thus contributing to the general weal of the community, by inducing those to *think* who have to do with the noblest and one of the most valuable animals in creation—the horse. The necessity for the inhalation of pure air, proper clothing, diet, exercise, and rest, are insisted upon by Mr. Dyer for the maintenance of health.

Then follow a few words on feeding, shoeing, and the examination of horses as to soundness. It is an unpretending *brochure* of twenty-four very small pages, and closes with the following statement, that "if a perusal of these pages tend to inform the tyro, assist the uninformed, and prevent unpleasant results to the accomplished in horse matters, the labour of the writer will be amply repaid."

Veterinary Jurisprudence.

DONCASTER COUNTY COURT.—September 5th.

(*Before* R. Wildman, Esq., Judge.)

BREACH OF WARRANTY OF A HORSE.

(*Special Jury.*)

SEPTIMUS EDWARD TURNER *v.* ROBERT ROEBUCK.

The following gentlemen were sworn upon the jury:—Mr. Godfrey Addey, Mr. Geo. D. Thorpe, Mr. James Foster, Mr. W. T. Bennitt, and Mr. Thomas Geldert.

Mr. Whitfield, of Rotherham, was for the plaintiff, and Mr. Smith for the defendant.

The facts of this case, as adduced by Mr. Whitfield, were as follows:—Mr. Turner, the plaintiff, is a veterinary surgeon living at Tickhill, and the defendant (Mr. Roebuck) is a butcher and farmer, residing at Wadworth. The present action was brought to recover £23 19*s.* for

damage sustained through the breach of a warranty under which plaintiff had bought a brown mare of the defendant, and which warranty was given by the defendant. It seemed that on the 27th of February last, Mr. Turner went to Wadworth, where he saw Mr. Roebuck, who had informed him that he (Mr. Roebuck) had a brown mare to sell. The plaintiff went to see the mare, and after some examination of her he bought her of the defendant for forty guineas, which was the price he asked for her. At the same time he received a written warranty of her soundness from Mr. Roebuck, to the following effect:—"Wadworth, Feb. 27th, 1861. Sold to Mr. S. E. Turner, a brown mare, rising five years old, which I warrant perfectly sound and free from all vice. Robert Roebuck." On the day after this purchase, the plaintiff went again to Wadworth for the purpose of paying the defendant for the mare, and also fetching her away. A short time after her removal to the plaintiff's stable at Tickhill it was observed, both by Mr. Turner and his groom, that the mare was continually putting one foot forward for the purpose of resting it, and continuing to do this for two or three days, Mr. Turner acquainted the defendant of the fact. The defendant then stated that the mare had been ridden hard, and hunted on the day before he sold her, and that she had also been badly shod. Knowing the defendant to be a respectable man, Mr. Turner naturally thought this a fair and legitimate reason, and that the symptom of resting her foot might be attributed to that cause, and therefore little notice was taken of it, the plaintiff being willing to rest upon his warranty, believing that ultimately all would turn out right. On the 11th of March, the plaintiff went to Mr. Foljambe's, of Osberton, that gentleman being at the time in want of a horse, and the result of that visit was that Mr. Turner was to lend Mr. Foljambe this mare for his own riding. The mare was forthwith sent to Osberton, and it was used by Mr. Foljambe for about five weeks, during which time it was noticed by both Mr. Foljambe and his grooms that the mare was continually pointing its foot and resting it in the same manner as previously observed by the plaintiff and his groom. At the end of that time the mare was returned to Mr. Turner, and then it was he found that the mare was positively lame, and on the 7th of May he had her examined by an eminent veterinary surgeon, Mr. Taylor, of Nottingham. That gentleman confirmed the plaintiff in his opinion of the mare's unsoundness—that she had a degree of malformation in one of her fore feet, which was the result of an unsoundness of the hoof which had been going on for some time, and it was his opinion that she was unsound at the time she was sold by the defendant. The mare was subsequently examined (yesterday morning) by Professor Spooner, of London, and he also pronounced the horse unsound, and gave it as his opinion that it was so at the time of sale. Before Professor Spooner's examination, the mare had been offered to Mr. Roebuck, who would not receive it back again, and therefore it was sold, and Mr. Roebuck bought her for twenty-two guineas, and she is now in his possession. After stating these facts, Mr. Whitfield for a moment drew the attention of the jury to what was the legal bearing of unsoundness, pointing out that if at the time of sale this mare had any disease or disorder about it which would at all interfere with her work and usefulness at that time, she was in point of law unsound, and such being the case his client was entitled to their verdict. Therefore the question they would have to consider would be, had the mare at the time of sale any disorder or disease, and of this he thought he should be able to fully satisfy them.

Mr. Whitfield then called a number of witnesses, including the

plaintiff and his groom, two grooms from Osberton, Mr. Angus, of Plumtree Farm, and the blacksmith who shod her, all of whom spoke to the mare going "feelingly," "groggily," and stepping short, all indications of unsoundness. Mr: Taylor, of Nottingham, was also examined, and he corroborated the plaintiff in his opinion that the mare was suffering and had been suffering for some time from chronic inflammation of the navicular joint, and that she was unsound at the time of sale.

Professor Spooner said, that he was Principal of the Veterinary College in London, and had been connected with that institution for upwards of thirty-three years. He had examined the mare in dispute this morning, and in his opinion she was unsound. He found that she went short in her fore action; he could not say that this was decided lameness, but it was an imperfect action, indicating to him that the mare had been habitually defective for some considerable time. With regard to her fore feet, he noticed that both were diseased—the horn of the hoof being very hard and brittle. It had also chipped near the punctures through which the shoe-nails passed, instead of being tough and yielding, as it would be in its sound and healthy state. This was particularly the case with the off foot—one foot was a little larger than the other. This, in his opinion, was a morbid state of the hoof, and calculated to interfere with the usefulness of the animal. The resting of the foot, and other symptoms which had been described by the plaintiff and other witnesses, were evidences of the mare's unsoundness. From what he had seen that morning, and from what he had heard in court, it was his opinion that the diseased state of the feet was of long standing; was, in fact, constitutional and hereditary. It had certainly existed at the time of sale. He had also examined the shoes which had been taken off the mare's hoofs, and now produced. He considered them very badly constructed, and calculated to excite the symptoms he had described. There were eight nails in each shoe, which he considered more than necessary, and he might state that half the evils of shoeing arose from too many nails being used in their appliance. In his opinion it was not chronic inflammation of the navicular joint that the mare was suffering from, but a diseased state of the hoof, which was hard and brittle, instead of being tough and pliable.

This being the case for the plaintiff,

Mr. Smith addressed the jury on the part of the defendant, his ground of defence being that the mare was perfectly sound at the time his client sold him to the plaintiff, but that when she returned from Osberton she had a corn upon each foot, which rendered her slightly lame, but that at the present moment she was again perfectly sound. He called the defendant and several witnesses to prove the condition of this mare's antecedents to the time of her being sold to the plaintiff. It seems she was originally bought by a person named Lamb for £11, and sold by him to the defendant at Bawtry Spring fair in 1860, for £15. That she was then as sound as the best horse in England, and was free from all lameness or unsoundness whatever. As to her state after the sale, Mr. Smith called several veterinary surgeons who had examined her, and as contrasted with Professor Spooner's evidence for the plaintiff, we may give that of—

Mr. B. Cartledge, who said he was a veterinary surgeon, practising at Sheffield, one of the board of examiners for the Edinburgh College, and veterinary surgeon to the 1st West Yorkshire Yeomanry Cavalry. He had examined the mare on the 15th of May, and found her perfectly free from lameness. She had a corn in each of her fore feet, and in his

judgment those corns had been produeed by bad shoeing. They were of recent standing—possibly some weeks, but not so far back as the 27th of February. He examined her again last Thursday, and he then found that the corns had entirely disappeared. Both her fore feet were of the same size precisely. He had examined her a third time this morning, and in his judgment she was perfectly sound and free from lameness of any kind. A corn might be produced in forty-eight hours, or perhaps in less time. Tight shoeing would produce a corn very quickly. She had been subjected this morning to a very severe examination, and certainly if she had any symptoms of lameness about her they must have shown themselves. The mare's action, in his judgment, was perfectly natural and perfectly even. There was nothing in the appearance of this horse which would lead him to the inference that she had ever been lame, and there was certainly no appearance of unsoundness. He could not say that she was sound on the 27th February, as she might at that time have been suffering from some temporary lameness, the effects of which might now have entirely disappeared. What he meant to say was, that her present appearance bore no indication of her having suffered from any chronic disorder. He did not agree with Professor Spooner in stating the brittleness of the mare's hoofs to be hereditary and constitutional; or in this case in looking upon it as a cause of unsoundness. She certainly had somewhat brittle hoofs, but not to cause those results spoken of by Professor Spooner.

Mr. Lawson, veterinary surgeon, of Manchester; *Mr. Edward Coleman Dray*, veterinary surgeon, of Leeds; and *Mr. Mather*, veterinary surgeon, of Doncaster, were then called, and all corroborated Mr. Cartledge's view of the matter.

Mr. Whitfield then replied upon the evidence adduced by Mr. Smith, and in doing so pointed out the fact that whilst all the medical witnesses on the part of the defence had spoken to the present soundness of the mare, and the total absence of indications of her having been unsound, yet not one of them had ventured to deny, but had all admitted, that she might at the time of her purchase by the plaintiff have been unsound from some temporary cause or other. Thus the case resolved itself into a nutshell, as it were. He had told them that, in a legal point of view, if the mare was unsound at the time she was warranted, that however sound she might afterwards become, the fact of her being unsound at the time of purchase was sufficient to justify an action for breach of warranty. That this was so in the present case must be apparent to them all, and therefore he hoped they would award his client that fair and reasonable amount of compensation to which he was entitled.

His Honour then briefly summed up the whole case, dwelling upon the conflicting evidence given by the medical men who had been called, and pointing out the fact that the three boys, who defendant had stated groomed his horses, and who could have spoken to the question of this mare's lameness, had not been called.

The jury, after a few minutes' consultation, returned a verdict for the defendant.

Mr. Smith applied for certain costs, which were allowed.

Mr. Whitfield then stated that the verdict of the jury was so contrary to the evidence adduced, that he was induced to ask His Honour to grant them a new trial.

His Honour replied that it was quite impossible for him to say whether the jury, upon the evidence, had come to a just or erroneous conclusion. They had had a great deal of conflicting testimony to deal with; he must refuse the application.—*The Doncaster Chronicle*.

MISCELLANEA.

OLDEN REMEDIES.

If our reader happen to have lived in the good old time—the Arcadian period of "merrie England," when, according to romantic writers, a few herbs and simples sufficed to medicine the ills that flesh was heir to in those robust days—"a falling sickness," we find, would have been treated with any of the following receipts, or perhaps with a succession of them:—"The blood of a weasel, to be drunk; the liver of an ass roasted, eaten fasting; an asse's hoofe burned, to be drunk; the brine excrescence growing on the coronet of a horse's hoofe, bruised and drunk in vinegar; stones found in the belly of a swallow's first brood tied in a piece of buck-skin and worn about the neck; cud of a sea-calf, to be drunk; gall of a beare; gall of a tortoise put in the nose; stork's dung drunk in water." These are receipts taken exactly as they come from the book of domestic medicine of the days of Cromwell. There was a higher class of prescriptions, however, then in use, which was evidently aimed at the superstitious feelings of the poor people drugged. The moss from a dead man's skull is recommended for a patient by Sir Kenhelm Digby, scrapings from human bones, poundings of a wolf's teeth, and even the hemp of a rope with which a man had hung himself, are to be found among the remedies prescribed less than two hundred years ago by learned doctors of the College of Physicians.—*From "Doctor's Stuff," in the 'London Review.'*

MRS. PARTINGTON'S LAST.

"So old Doctor Quill is dead," said Mrs. Partington, as she put an extra piece of butter on her bread. "They do say that he died of information of his brain; but they mustn't try to make me believe sich an unprobable story as that—information on the brain, truly! Why, he was the greatest fool I know on! I can't help laughing at his presumptuous ignorance. Why, didn't he, at one of his lectures one cold night last winter, try to make me believe, together with the rest of a large respectable ordinance, that the sun was then nearer the earth than it would be in the hottest day in summer?—and didn't he try to suppress on my mind, when he called on me, that time is money? O, the dolt! Why, there's Cousin Slow (he has his whole time—he never was known to do anything), and the world knows how poor he is. O, you can't make me believe sich stuff! I wonder what will carry me off, if he died of information?" and she arose from the table flushed with excitement.

ERRATUM IN NO. 402.

At page 366, *for* John Hanley, *read* John Hauly.

THE

VETERINARIAN.

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Communications and Cases.

OPENING OF THE SESSION AT THE ROYAL VETERINARY COLLEGE.

INAUGURAL ADDRESS BY ASSISTANT-PROFESSOR VARNELL.

Gentlemen,—In accordance with established custom, we meet to-day to inaugurate another sessional course of instruction in the several departments of veterinary medicine. I have been deputed on this occasion to deliver the usual introductory address, and although I willingly accept the honour, I nevertheless doubt my power to do full justice to a subject of so much importance, both to the teacher and the taught.

Your teachers meet together as friends and colleagues, to devote their time and energies in carrying out the object intrusted to their care, viz., the education of the rising veterinary surgeon and the genial influence of so many familiar faces seems to create new inducements for increased exertions to fulfil that important trust. The student also, especially him who for the first time has entered upon the threshold of the profession, feels his heart beat with a hope that he may one day excel in that which he has undertaken, and in due time, by diligence and well-doing, may become a distinguished member of his profession.

When I reflect on the position of the junior students, I feel that I cannot do better than devote some portion of the time usually allotted to the delivery of this address in giving them an insight into the profession they have selected. There are many who now occupy the benches of this theatre who have but a very dim idea of the things relating to their future studies or pursuits; experience of what lies before them they

do not possess, nor can they realise the advantages and rewards that are within their reach, but which can only be obtained by industry and perseverance. They may be compared to one who has just arrived in some foreign country, the highways and byeways of which are unknown to him. To a person so circumstanced the help of some one acquainted with the district, and who would act as his guide and adviser, would undoubtedly be desired. So I think it would be most salutary that you should receive from those who are already acquainted with the profession, some idea of the benefits likely to accrue to you if you act honorably, and are actuated by high and noble motives.

Let me now say a few words with reference to what the public requires and ought to expect from the members of the veterinary profession.

The time is not very remote when the owners of domestic animals had no other aid, if disease attacked their horses, flocks, and herds, than the village farrier, or cow-leech: to him alone was intrusted their care. These people, ignorant of all principles which should guide them, and many of them often half intoxicated, groped their way in utter darkness, and, as a rule, did much more harm than good.

Their employers, also, were often as ignorant in such matters as themselves, and could not have appreciated science had it been within their reach. But you must all know that at the present day the case is quite different; from the nobleman with his thorough-bred down to the owner of a single cab-horse, each expects in the veterinary surgeon that amount of skill which is likely to insure the proper medical care of his stock. He is no longer contented with the farrier, who blindly administers his nostrums, without the slightest idea whether they are to do good or harm. It is not at all uncommon now-a-days for the practitioner to be interrogated as to the nature of the disease an animal may be labouring under, and the course he intends to pursue in certain cases; and if his answers are not based upon scientific principles, the interrogator detects it, and is not satisfied, nor should we expect that he would be: he might reasonably think that the veterinary art ought to have progressed correspondingly with other sciences.

Just think of the immense quantity of valuable animals that are located in almost every district in Great Britain, and which form a large portion of the nation's wealth; think for a moment of the value of some choice mare or horse, the only one left, perhaps, of a particular breed, which not only the owner, but the public generally, consider of the

greatest importance that it should be preserved to breed from. Again, consider the splendid herds of cattle and flocks of sheep, such as are not to be found in any other part of the world; remember, also, the poor man's horse, the only means, perhaps, he possesses of earning his daily bread; or the poor woman's cow, the produce of which her family has mainly to depend upon for a living, and then say to yourself, ought I to neglect any opportunity afforded in gaining knowledge, which would enable me to preserve these lives when attacked by disease? Let us suppose that a veterinary surgeon is called upon to attend some valuable horse, such a one as we have above alluded to, labouring under an acute disease, yet curable if a moderate amount of skill be employed, but under his hands he dies, and on reflection he conscientiously feels that he was neither able to diagnose the case nor to suggest treatment likely to afford relief. What must be his feelings under such circumstances? They must be those of shame; nevertheless, he has persisted in doing something, with a view, most likely, of making the owner believe that he understood what he was about, while at the same time he was acting quite in the dark, giving medicine about the action of which he knew nothing. Thus he is obliged to resort to deceit to cover his ignorance. Or to take another example, suppose an epizootic breaks out in the country, or an enzootic in any particular locality, whom should we expect the agriculturist and other owners of animals would naturally fly to for advice? Why, the veterinary surgeon, and who really ought to be able, if any one is, to stay its destructive ravages, or point out such means, hygienic or otherwise, as shall best tend to arrest its course. This power we will suppose to be within the boundaries of science as understood at the present time; and although within his reach, he neglected to acquire it: would he not, from such neglect, be a disgrace to the profession he claims to be a member of? Or should he be called upon to attend the poor man's horse or the poor woman's cow when they are ill, and sees them die, when he really believes that they might have been saved had he known what disease they were labouring under, and possessed sufficient medical skill to have applied proper remedies—what, I ask again, must be his feelings when he sees their little all swept away through his ignorance? I feel persuaded that it would be better for the owners of stock, one and all, rather than trust them in the hands of such empirics, to let nature have a chance, and not to allow her laws to be frustrated by the ignorant pretender.

I will now present to your view the other side of the

picture, illuminated by science, humanity, honour, integrity, and kindness. We will take for this purpose a practitioner who, from the time he entered the college in which he was educated to the end of his pupilage, always availed himself of every opportunity in acquiring information, and whose whole thoughts were imbued with ideas of his future usefulness and the dignity of the profession he had chosen, and who also, after having obtained his diploma and entered into practice, considered himself still a pupil, anxiously searching every avenue accessible to his desire after knowledge and truth, saying with Locke, "It is truth alone I seek, and that will always be welcome to me, when or wheresoever it comes." If new and useful truths are discovered by him, he throws them into the common store, glad to distribute, and willing to communicate. Imagine to yourselves the position such a man would, almost of necessity, hold in society; think how his services would be appreciated by those who required them, aye, and by every member of society too, from the peer with his thoroughbred to the peasant with his single horse, and from the titled lady with her pet dog to the widow with her only cow; and why? Why! on account of his integrity, his skill and attention, by which he is able to save the lives of many animals intrusted to his care, which would otherwise have been lost.

I have thus briefly drawn your attention to both sides of the picture. On the dark side, I have endeavoured to depict an individual professing to treat the diseases of the lower animals, but, for the want of such principles as might have been attained by industry and attention, he is obliged to work his way in the dark, and, in many instances, without even the aid of traditional experience—is obliged, also, to resort to all sorts of cunning devices to blind his employers. Should it even happen that he is correct in his judgment, he is not aware of it, and may suspect he is wrong; in fact, the life of such a person is full of tricks and expedients, without which he is in continual danger of falling, and, therefore, he finds it necessary frequently to repeat them. Should he, however, not succeed by such manœuvres, he often further disgraces himself by intemperance, low company, and the ruin of both health and character. Such instances, I am sorry to say, are too numerous in our profession. These, gentlemen, are only a few of the penalties consequent upon intemperance and the not acquiring that information which was within reach during your pupilage. Such individuals as I have briefly portrayed often possess great talents, but these have either been blighted by such

habits as I have alluded to or been used for improper purposes.

Let us pass from this gloomy picture to one of a brighter aspect, and to which additional lustre is given by a life of goodness and usefulness. It is no fanciful picture that I have presented to your view. Nearly twenty years' experience with veterinary students in this institution warrants me in stating what I have; it also justifies me in pointing out the things to be avoided—as the mariner shuns the sunken rock or shallow quicksands, the danger of which is indicated by some lighthouse or other friendly mark.

I do not wish to be misunderstood; I have said that instances such as I have just alluded to are too numerous. It would be well if none existed, and it would be gratifying indeed if all could be placed on the bright side of the picture —and happily a very large majority deserve such a position. In my comparatively short career in this institution, I have met with a great many students whose conduct has been most exemplary and their progress in every respect satisfactory, who, when the time came to present themselves before the board of examiners, felt ready for the ordeal they had to pass through. They knew that they had not neglected any opportunity of acquiring knowledge, they felt sure that if their memory was not treacherous they should pass a good examination; they therefore presented themselves full of confidence and hope.

On many occasions I have thought it a great pleasure to witness the examination of an assiduous, intelligent pupil; his answers are not guesses, nor does he evade or equivocate. Should he not happen to answer every question, he says that he cannot remember, and the experienced examiner at once detects the truth of his assertion, and kindly helps him out of his temporary difficulty, or turns to some other subject. This pleasure has been added to by seeing him receive his diploma, accompanied with the congratulations of the chairman of the board, and his kind admonitions to keep on in the same path of industry, and at the same time telling him to consider himself still a pupil, and to endeavour to become more perfect in the profession he has chosen, and that if he adopted this course he could not fail to succeed in life—that he would become an ornament to the profession as well as a good member of society. To witness the recipient of a diploma, which it had been his highest ambition to obtain, to mark his animated countenance, his apparent self-satisfaction and determination, which you can almost read in his countenance, to continue in the right course, is most gratifying:

and then, again, to observe the expression of his thanks to his teachers for the assistance they have afforded him, is, I have often thought, sufficient to repay us for our exertions in his behalf, and to excite in our breasts fresh inducements to labour for those who are to succeed him. To continue the description of the picture I have drawn, we must follow the successful pupil into practice. Some few are desirous of being army veterinary surgeons, others wish to locate themselves in large towns, but the majority perhaps return to the country. As a rule, in either of these localities they are successful.

Those who desire to get into the army, and are fortunate in obtaining appointments, are thrown more especially into the society of gentlemen, among whom they often find personal friends, and at the end of a certain period, well spent in such service, they are rewarded by a pension for life.

To show how the veterinary surgeon in the army is appreciated and respected, I may state that it was only a few days ago that I heard an officer, who had just returned from India, allude to the veterinary surgeon of his regiment in the highest possible terms. In speaking of his professional capabilities, he expressed himself somewhat as follows;— "He thought they were of a superior order; and, as an honorable, upright man, he felt sure he was not surpassed by any one, either in the army or out of it." He further added that "such was the general opinion of all the officers of his regiment, and of others also who knew him." Reports like these of members of our profession reflect credit upon the whole body, and should act as a powerful stimulus to others to merit similar approbation. The same good report, I have no doubt, could be made of many others connected with the army, and highly gratifying it doubtless is to their principal veterinary surgeon, who, I observe, has honoured us with his company on this occasion.

Those who remain in large towns generally have the most lucrative practices, but they have to work hard; nevertheless they have their reward, as many of them are able to retire early from the turmoils of professional life, surrounded by friends, and with an income sufficient to meet all reasonable wants.

Now let us follow those who return to the country, where, as a rule, they are equally successful. The nobleman, on his large estate, is generally glad to find that a man of ability is in his neighbourhood, and will speak of him as an acquisition to that part of the country. The agriculturist thinks himself fortunate in having the advantage of

so much science, and, with confidence, will place in his hands the medical care of his stock, and will also be glad of his advice in many other ways. His professional knowledge will often be sought respecting the means best calculated to preserve the health of stock, which, we must admit, is or ought to be as much the province of the veterinary surgeon as it is to cure them when attacked by disease. Such a course will be no barrier to his progress, and, if carried out with a right spirit, will be duly appreciated. Again, he will be of great service to agriculturists and others, both in the purchase and also in selling of animals, by examining them as to soundness; often also will he be called upon to arbitrate between buyer and seller in cases of dispute, and which, in many instances, he is more capable of doing than an unscientific person would be.

There are very many things interwoven with agricultural pursuits, which the veterinary surgeon, from the knowledge he possesses of the laws that influence health, both in animals and vegetables, can exercise with great benefit to the public, and which would also tend to raise his worth in their estimation. The physician or surgeon of the town or village in which he resides would be glad to introduce him to the notice of the wealthier classes in the neighbourhood, who would be likely to be influenced by such an introduction. And how is it with the poorer classes—those who keep, perhaps, only one or, at most, two animals, it may be only a pig, which is as likely to be taken ill as if belonging to the rich; will he refuse to attend to them? Certainly not; the veterinary surgeon, that I am alluding to, will be ever as ready to give them the benefit of his professional skill as though they were the property of his more wealthy employers. He may not expect much remuneration for so doing, but he will receive the heartfelt thanks of people who are not deficient in gratitude, and which is often a greater reward than money.

Thus far I have endeavoured to point out to you some of the penalties and rewards likely to accrue to a veterinary surgeon.

We have seen that a few, who get their diplomas I can hardly tell you how—for during their pupilage they seldom studied — commence practice, but, from inattention and want of knowledge of their profession, combined very often with intemperance, they manage to squander all the money at their command, and very frequently abuse also a friend's kindness, which is often trespassed upon to an inconvenient extent. The public also lose confidence in such

persons, and the profession is disgraced. What, I would ask, must be the fate of such mistaken men? Nothing, I conceive, but degradation and remorse.

Fortunately, however, a very large majority act otherwise: with them the period of their pupilage was a pleasure and their examinations highly creditable. That portion of their life devoted to the practice of their profession was honorable, so that they were enabled to retire early into private life, respected by all who know them.

I need not suggest to you which of the two courses you should take; I feel sure that all of you have resolved to pursue the latter; if so, keep steadily to that resolution as a sacred duty, and your success will be almost certain.

The remarks I have already made are intended as incentives to study, and also as inducements to follow a proper course, both during your pupilage and in after life, neglecting no opportunity in acquiring all the information possible within your reach.

A student in medicine, whether human or comparative, should, in a certain sense, be like an artist who delights in the work of his creation. He heeds not pecuniary remuneration, but paints on because he is fond of the art. As an artist, he is ambitious to excel, and pleased to find that he is talked about in society by men of taste, and often rests contented, therefore, if the production of his genius enables him to support himself and his family.

The real object of our profession is the preservation of the health of our horses, flocks, and herds; and when they are invaded by disease to bring to bear as much skill and attention as we possibly can with a view to remove it. Remember that, in all our operations, or any other treatment we may have occasion to resort to, we are bound to be as humane as possible, and not to put any creature under our care to unnecessary pain; nor should we allow, in our presence or to our knowledge, any animal to be misused or ill-treated: in this respect, we may, with much consistency, consider ourselves the guardians of domestic animals.

But we must take care not to abuse this trust. Let all our acts correspond with what we profess; let us in no way sanction wanton acts of cruelty; let us, as men of science point out, whenever an opportunity offers, the folly and also the loss sustained by injudicious proceedings in reference to racing and other sports. Let us consider the great loss and unnecessary pain there is produced by training and running horses at an age long before they arrive at maturity, being, perhaps, not more than one and a half year old. It is well

known that a large portion of such animals are irrecoverably lamed, their joints become diseased, their ligaments and tendons strained, their bones and the membranes that cover them inflamed. In such a condition they are placed in the hands of the veterinary surgeon, very often with a peremptory order that he will fire and blister the limb or limbs affected, and instances are not uncommon for a request to be made (if one leg only is injured) to fire the opposite one also, with a view, as the owner supposes, of strengthening it. Should these directions be acted on, the poor animal's legs are cauterized, with the hot iron, and after a time he is again sent to the trainer for the purpose of being tested; he may stand training, or he may not; he may break down the first race he runs; if so, what then is to become of this noble but ill-used animal, as yet, perhaps, not three years old? It is thought, perhaps, that it is not worth while to try his power again as a racehorse; therefore, what is to be done with him? Why, if his pedigree is all right, he is sent to the stud, carrying with him disease, a tendency to which, in my opinion, can be transmitted to his offspring. Or if he is not thought worthy of such a position, where are we likely to find him? Why, in the "Hansom cab," where, with bent knees, thickened and diseased tendons, legs tattoed with the unmerciful firing-iron, galled back, and sore shoulders, and a broken spirit, this noble animal wears out a miserable life.

Such was not the original intention in introducing the thoroughbred horse into this country. It was thought, and rightly so too, that our breed could be improved; that a fine animal, suitable for various purposes, could be produced and perpetuated, thereby adding greatly to the nation's wealth. I admit that thoroughbreds are of an immense value as it is, but I contend that if there were not so many *weeds* and cripples as there are, their intrinsic value would be much greater. Is it not cruel thus to treat animals at such an immature age? Is it not unwise in an economical point of view, is it legitimate sport to overtax the powers of a willing horse, producing, as we have seen, such severe and painful injuries to his limbs? Is it consistent with science and humanity to witness such wanton cruelty without attempting to point out the great error committed? If our duty as veterinary surgeons is what I conceive it should be, we ought neither to tolerate it nor pander to the whims of those whose judgment we have reason to doubt.

Legitimate sport I can understand and appreciate, but when racing, steeple-chasing, &c., is conducted for another purpose, and that without any regard to humanity, I do

think that we should not be acting well unless we strive, as far as we can, to alter such a state of things. The science of veterinary medicine is not worth much unless it goes hand in hand with economy and humanity.

I have now arrived at a part of my address most suitable to allude to the means provided by the Governors of this institution for the instruction in the several branches of your studies; I will therefore endeavour to point out as briefly as possible the importance of each division, and shall also offer some suggestions which may assist you in acquiring information.

I would first wish to impress on your minds that lectures are not, and must not be considered, sufficient of themselves to impart to a class of students all the information requisite to fit them for the practice of the profession. The lecturer must be looked upon as a sort of pioneer, who is more capable of conducting you over the domain of scientific research, and by a much shorter route, than you would be able to discover without his aid. Therefore, from the moment the pupil enters the College he should endeavour to co-operate with his teachers in their efforts to instruct him.

Now, it may be supposed that all of you have more or less a conception of healthy animal function, which is necessary to enable you to appreciate the slightest inroad of disease. Should any of you feel yourselves incompetent to understand this phenomenon, you had better occupy some of your leisure time, as soon as you can, in examining horses and other animals believed to be in a healthy condition. The experienced eye need only to glance at the different kinds of animals to be able to detect if any of them are ill; this the man of practice can judge of to a great extent from their general appearance, without the necessity of any particular examination. I should recommend, also, those of you who are not familiar with the habits of animals in a healthy state to go amongst them at all hours of the day and night, to stand by them, and watch their peculiarities. Notice their mode of resting themselves, study the character of their expression, which, among the lower animals, may be depended upon as an almost infallible guide to health. Be particular in forming an opinion of the healthy condition of the skin at different periods of the day, and also at different seasons; ascertain the character of the secretions and excretions, both as regards their quality and quantity, and how they are likely, from different circumstances, to vary, such, for example, as the season of the year, the amount and kind of food, the peculiarities of one animal as compared with another, with especial reference to its age and temperament. I would likewise impress on your minds

the importance of knowing the character of the *pulse*, and the number of its beats per minute, in the different animals you are likely to be called upon to treat for disease, as also the number of respirations under different circumstances. In carrying out this investigation you will have to take into consideration temperature, temperament, age, locality, and the state of the alimentary canal, and whether the system is in a state of repletion or depletion, and many other important peculiarities.

With this information you will be better prepared to commence the labours of the session than you would be if entirely unacquainted with the habits of animals. "He who wishes to take away knowledge must bring knowledge with him."

Three lectures will be delivered daily, with the exception of Saturday, when there will be only two. They will embrace Anatomy (general and descriptive), Physiology, Veterinary Jurisprudence, and Remarks on Shoeing; also, Pathology, Chemistry, Materia Medica, and Pharmacy. There will also be Demonstrations daily in the Dissecting-room, and Clinical instructions every morning in the Infirmary.

With regard to the subject of each course of lectures, I shall not dwell upon them in detail; your teachers will explain these, and also enforce their respective value. Every division of your studies is important, but there are two which, in my opinion, should occupy much of your attention. I refer to that information which can only be obtained in the dissecting-room and in the infirmary. In the dissecting-room Anatomy is learned, and there only. This idea I early imbibed, and long experience has confirmed the correctness of it. With reference to anatomy I would strongly advise you to spend as much time at the dissecting-table as you possibly can, without interfering with your other studies.

Every veterinary surgeon ought to be as familiar with the anatomy of those animals, likely to come under his care, as he is with the furniture in his house; and should be able to readily find any object or part. He should even understand the difference between one organ and another by touch, and should also know the variations occasionally met with in the same animal.

General and descriptive anatomy is of so much importance that without it every step you take in the practical part of your profession is, as it were, in the dark. It is impossible even to judge of the fitness of horses for particular purposes without its aid so well as you can with it, but it is, perhaps,

of the greatest importance in surgery; it assists in forming a correct diagnosis and gives confidence and precision to the operator. Repeated dissections are the only means of gaining this knowledge; books and lectures are merely guides; what you learn from them is only what other people know; it is not knowledge of your own, nor can you appropriate it to the same extent as that which you acquire for yourselves by hard work.

Without a knowledge of anatomy how is it possible to understand physiology, a science I may now be permitted to direct your attention to?

Physiology is the science which treats of the condition, phenomena, and laws of the life of the animal body in a state of health. To study and understand this science it is necessary, as before stated, to be acquainted with the minute anatomy of the tissues and organs of which the animal body is composed, as well as with their chemical composition. Certain processes also must be considered as important to be understood, such, for instance, as digestion, absorption, secretion, and excretion, also the circulation of the blood; assimilation and nutrition, and other functions which I need not, for the purpose of illustration, enumerate. The mind should be so imbued with the principles of physiology that disease may at all times be considered in relation to the healthy standard. From these remarks you may observe that you cannot make much advance in your studies without seeing the dependence one division of science has upon the other. To witness the minute structures of which the different organs of the body are composed will require the aid of the microscope, which will not only reveal to inquiring minds the minutest particles, but also their arrangement. Without such aids as this and chemistry, I am at a loss to understand how physiology can be studied with any degree of advantage. To be sure, we can read books, pictorial or otherwise, and hear lectures, and by careful attention to them gain a great deal of information, but it is a different kind of knowledge to that which we get by investigating and seeing for ourselves. If we see and thoroughly examine anything, we are impressed with its form and peculiarities; not so, however, by simply hearing it described. To convince you of the truth of this assertion, just examine a section of bone or tooth (one of the simplest objects) by the aid of the microscope, when I feel assured you will agree with me that all the teaching and reading in the world could not so thoroughly impress you with the arrangements of a system of tubes called Haversian canals as a single glance through this beautiful instrument. Knowledge, of whatever

kind it may be, to be of any value must be worked for. It cannot be transmitted from one person to another; in fact, four fifths of what you may accumulate during life will go with you when you die. Others will have to work for it, as you did before them.

Supposing that you have become acquainted with the structure, functions, and composition of the animal frame, it is also important that you should have a knowledge of development, growth, and nourishment. This department of physiology has an important bearing on the study of diseases, and the means of acquiring such information appears to be comparatively easy. The formation of the embryo, its growth and permanent nutrition, depend pretty much upon cells; it is so in the vegetable as also in the animal kingdom. We may here find an aid to our study, viz., by referring to vegetable physiology. We must also consider the multiplication of parts, their change of form, and composition; and to understand the latter we have again to call in the aid of chemistry.

I will now direct your attention to PATHOLOGY. I have briefly stated that physiology treats of the living animal in an ideal state of perfection. On the other hand, pathology professes to explain all phenomena furnished by the body in disease; and it is the duty of the pathologist to interpret the changes it undergoes. The common observer may be quite able to say "this is a soft liver," "this mucous membrane is very red," "such muscles are wasted," "such a lung is studded with abscesses," or, on the other hand, it "is hard and heavy," or "the cornea," or "lens of such an eye is opaque," but because he can do all this he is not therefore a pathologist. He does not explain the cause or the laws which govern the existence of these changes.

The first duty of the pathologist is to interpret the facts of disease, which interpretations are founded upon the analogies of health. This must appear so clear as to enable him to point out their contrast to healthy action; therefore, to study this science to advantage, a knowledge of health is required, and all pathological observations should be founded on that standard. For example, when you state that a "mucous membrane is red," you mean that it is redder than a healthy mucous membrane. Or if you say a "liver is softened," you mean that it is soft as compared with a healthy liver. In this way you would go on expressing the phenomena of disease by a healthy standard. To understand one you must know the other, and thus, you see, physiology, or the science of life in health, and pathology, or the science

of life in disease, blend into each other; the latter cannot be well understood without a knowledge of the former. You will next be led to the wish to discover the causes of the changes in structure and function met with in disease. Here you will find yourselves in a field, as yet, not highly cultivated by members of our profession, although the opportunities afforded them to do so are comparatively numerous.

There is no doubt that our confidence in treating disease is determined by the knowledge we possess of its cause; we ought not to be content with a supposed cause. We should desire to understand the *modus operandi* of every assignable cause, and also the changes which, step by step, develop the ultimate phenomena.

Gentlemen, I have very briefly alluded to the science of pathology, but, before leaving the subject, I must earnestly invite you to embrace every opportunity, as far as you possibly can, in discovering the latent processes by which disease is established, and the means of removing them. Use your energies in this field of science, and, depend upon it, a perpetual harvest will be your reward.

In the commencement of these observations, I informed you that lectures would be given on the 'Principles and Practice of Medicine;' I therefore feel it incumbent on me to offer a remark or two in explanation of what is usually understood by this term.

"By the principles of medicine," says Dr. Watson, "are meant those general truths and doctrines which have been ascertained and established (slowly, indeed, and irregularly, but still with considerable precision) by the continued observations of attentive minds throughout the entire progress of medicine as a science." These principles will be taught you in the lecture-room, as far as time will permit.

The practice of medicine, like any other art, can only be acquired by repeated exercise of the senses, which require a special course of training before you can rely upon their evidences in the investigation of disease. To be able to practise medicine, presupposes a knowledge of anatomy, physiology, pathology, and the action of medicinal agents; then, by strict observation of animals, in company with persons of acknowledged experience, you will be able, with the knowledge you have imbided from lectures, to acquire the requisite tact. Time spent in the stable, the cow-house, the sheep-fold, and other places, with diseased animals, observing closely their symptoms, watching the progress of disease, and noticing what is done, how it is done, and the effects which follow, are the surest means of learning the practice of medicine.

Lectures on this division of science prepare the mind to receive and understand the phenomena of disease, and the effects of the agents administered for its cure. If the mind is already prepared by an experienced pioneer for what it may expect to witness, how much more readily, do you think, will it be enabled to drink in real knowledge?

Veterinary Medical Jurisprudence, although not forming a separate course of lectures, will be dwelt upon on particular occasions. It may be viewed as one of the most important divisions of the curriculum, or the most responsible department in the profession, for it certainly is one that requires the most varied attainments. It connects very closely medicine with legislation, and no doubt that its origin, like other laws, has arisen out of the frauds and vices of men. As vices become more common, the law becomes more rigid and energetic in finding out the perpetrators. To accomplish the end of the law, the veterinary surgeon is often called upon to examine parts, for the purpose of ascertaining the real or supposed cause of death, so as to give evidence in courts of justice. Many cases of supposed poisoning require the forensic anatomist and also the toxicologist (both divisions of medical jurisprudence) to investigate them. Morbid Anatomy is requisite, and also the all-powerful aid of Chemistry.

The anatomist may detect lesions which would lead him to conclude that the animal had taken poison; but upon what grounds does he base his opinion? Why, the correspondence of those lesions to what he had before witnessed or read of, when certain agents capable of destroying life had been detected. The conclusion thus arrived at may, in the minds of some, be sufficient; but I think we ought to hesitate in making such a statement, except for the purpose of suggesting the advisability of employing some more definite means of ascertaining the fact, such as the aid of chemistry. Other cases of actual poisoning may come under the notice of the anatomist, in which he searches in vain for any alteration in structure even sufficient to excite in his mind a suspicion. In such an instance, however, there may have been strong pathological indications that some deleterious agent had been taken into the system, and the toxicologist is therefore engaged. He carefully investigates the suspected agents, and some powerful alkaloid is detected whose action would produce symptoms analogous to those observed before death. Here we see, beyond dispute, a blending of the sciences to the advantage of our profession and also the public. The veterinary surgeon will do wrong, in my

opinion, if he attempts to decide by analyses carried out by himself in cases of poisoning, as they require the profoundest chemical knowledge and the most careful manipulation. He would not wish, through his blunders, that the guilty should escape, or the innocent have their liberty interfered with. Gentlemen, it is fortunate for you that your teacher in this department of your studies is so proficient in medical jurisprudence, and so competent to give you advice as to how you should proceed in such important matters.

At the onset of my address I alluded to the shoeing of horses, and stated that information on that subject would be given. Of course I alluded to the principles only that should guide you in determining whether such work is done well or not, or, what is more especially within our province as veterinary surgeons, whether the shoes that we inspect are made and put on in a way calculated to lame the horse or not. As veterinary surgeons, we have nothing particular to do with the material used or the expense attending the business generally. All this legitimately belongs to those who make the shoeing of horses their special business. If the veterinary surgeon chooses to combine it with his practice (which he may do), then he becomes responsible for the way in which it is done, and under such circumstances will find it important that he should, at any rate, be acquainted with the theoretical and commercial part of the business, for the purpose of conducting it profitably, and also to be able to distinguish between a good workman and a bad one. No doubt there are certain principles in shoeing which the anatomist and physiologist is alone able to point out; but because this is the case, I see no reason why he should follow the calling. The anatomist and physiologist can also point out to those who make shoes for the human being, or to the staymaker, how it is that so many are crippled by shoes ill adapted to their feet, or that by stays being too small so much injury is done to the health of many females; but all this would not convince medical men that they ought to combine the businesses of staymaker and shoemaker with the practice of their profession, nor could you convince themthat its dignity would be in any way enhanced by such a combination. However, we know that there are many members of our profession, of the highest respectability, and whose professional reputation cannot be doubted, who have thought proper to have forges. Not (and I have heard many of them say this) because they are profitable, but because a practice could not be supported or held together without one. Now, I think it a very sad thing that the profession should need

the aid of such support. Is veterinary science of that high standard, like many metals in a pure state, that will not work well unless a certain amount of alloy is mixed with them? If the body corporate could only persuade our Government to make a law imposing a penalty on those who may practise as veterinary surgeons, not being members of the Royal College of Veterinary Surgeons, and also withhold from all those calling themselves farriers any assistance by law to contest bills for medical attendance on animals, then I think the veterinary surgeon would be in a better position to do without the forge.

I have thought it right to make these remarks, with a view to excite in the minds of the rising generation of veterinary surgeons ideas calculated to enhance the standard of our profession. There are very many who hold a high position as veterinary surgeons, and whose private character is without a stain, who, when young, worked in the forge; but, nevertheless, I am sorry to say that in my time I have met with many, too many, who there acquired a relish for low company and habits of intemperance, which they never after got rid of.

I will not dwell on this question any longer; the remarks I have already made may not accord with the sentiments of many, some of whom I have the highest regard for, and whose feelings I respect; nevertheless, feeling as I do on the subject, and placed in the position I am, I deem it my duty to point out the rocks or shoals on which some have been wrecked, and by which the progress of the profession, in my mind, has been much retarded.

I may direct your attention to another division of your studies, namely, Chemistry—a science which shines brightly forth without the aid of any borrowed light—a science so dignified by its intrinsic worth, and by the great and noble men who have been its cultivators, that I mention it with diffidence, lest I should in any way undervalue its importance. Chemistry has to do with everything; therefore, how can we, as veterinary surgeons, expect to do without it. Chemistry is the foundation of Pharmacy, Medical Jurisprudence, and Physiology; even Anatomy, as we have before stated, depends upon it for the chemical composition and nature of the fluids and tissues of the animal body. Its field of research is almost without a limit, and the science itself so fascinating to those who carry out investigations in the laboratory, that I feel it necessary to

caution you in the pursuit of this, not to neglect other studies which to you, as veterinary surgeons, are perhaps of equal, if not greater importance.

Very nearly allied to Chemistry is Materia Medica, a science which treats of the properties of medical agents. You will also receive instruction in Pharmacy, which demonstrates the way such agents are procured from nature, and prepared for administration. Also Therapeutics, which explains their action on the living body.

The knowledge acquired in these departments changes empiricism into science, and gives the student increased interest in the study of nature's works and laws.

Gentlemen, I have, as I intended, been very brief on this subject, being aware of my incapacity to allude to it in such terms as its importance demands.

In the advertisements of the college you may have observed that you will have the benefit of clinical instructions during the early part of the day, in the infirmary stables. Clinical instructions have reference to those given at the bedside of the patient; we must therefore consider, when we are in the stall or loose-box, with the sick horse, that we are at his bedside, that is, if we wish to use the term in its usual sense.

In performing this duty, the professors will point out the nature of each particular case, and as far as he is able he will endeavour to find out and explain its origin, and the progress it may have made before it came under his notice; he will also examine the symptoms, and attempt to explain the organic lesions upon which they depend.

By carefully analysing the case in this way, he will be able to form a prognosis, and determine the best kind of treatment to be pursued.

I wish you to understand that you must not expect his attempts will always be successful. In some instances the cause cannot be discovered, in others he may fail to locate the disease with that degree of precision he could wish, or to discover its character with exactness. And he may not be able to explain the symptoms with that clearness he could desire, or the action of the medicine he administers. Nevertheless, he may still be able to simplify the case, by pointing out what is clear and what is obscure.

The senior pupils are in a condition to receive the greatest benefit from Infirmary practice, and each of these I would particularly invite to lose no opportunity of availing himself of the advantage to be derived from it. The lectures he will have heard during the first session of his studies, and the

knowledge he possesses of the form and composition of the animal body will prepare him for such investigations. He may be, perhaps, only acquainted with morbid phenomena from what he has heard or read of in books, but in the infirmary he is brought face to face with disease; and if he will take the trouble to investigate the cases that come under his notice, he will be able to observe their symptoms and note their results. In your visits through the infirmary, not only will your teachers point out what they may consider most important, but they will very often put questions to those in attendance, with a view of testing the progress they have made in interpreting disordered functions. I should also advise those who can devote their time to this division of their studies, to keep a case-book of their own, in which a record of interesting diseases should be kept, noting down the symptoms, treatment, progress, and final results. To this record may be added the professors' remarks, and anything they can glean from standard works on corresponding cases, and their own thoughts on the whole procedure. I may also remark, that the professor in attendance will not only be pleased to answer, as far as he is able, all reasonable questions that may be submitted to him, but will expect that the pupil will not hesitate to apply to him for information.

In your clinical investigations you will find diseases much more complex than you had anticipated from reading books, nor are they so definitely marked out as writers would lead you to expect. You will often find that the treatment we adopt, in many cases, is quite different. The change consequent on the medicine given, or the supervention of new symptoms, may surprise you, and induce you to ask for an explanation. You will also find that an alteration in locality, diet, &c., will be found all sufficient in many instances to cure diseases.

The curative power of medicine is by many much overrated. In considering its value, we ought to take into consideration the cases that would get well without any medicine whatever and those that are incurable by any known agents. The comparative small amount of physic many cases actually require will, we shall find, very much diminish our drug bill. But these considerations must not lead you into the opposite error, of putting too moderate an estimate on the beneficial effects of medicine in the treatment of disease.

In human practice, I can conceive that medicine may be of the highest importance even in incurable diseases. Imagine a person suffering under some lingering complaint,

racked with pain of the acutest kind; the medical attendant, as a matter of humanity, would give such agents as would afford relief, and also tend to lengthen life, although perhaps only for a short time. But with us, as veterinary surgeons, whenever we consider a case decidedly incurable, we should at once advise the owner to have the animal destroyed. It would be an imposition to put him to unnecessary expense, and a piece of cruelty to the animal itself.

Demonstrations will be given daily in the dissecting-room. Here you will be able to acquire a knowledge of descriptive anatomy, which, with general or structural anatomy, forms as before stated the basis of your professional knowledge. By dissecting parts over and over again, you may become, as I have said, as familiar with the different organs as you are with the furniture in your room. To many this division of study may be at first extremely unpleasant and very irksome, but after a time they will feel a deep interest in the pursuit. When they come to unravel the intricacies of the animal frame, and see how beautifully every part is adapted to an end, and how each harmonises with the other, and to understand that a thorough knowledge of every part is important to a knowledge of physiology, they will become enthusiastic in the science.

I would advise the junior students to devote what time they can spare from the lectures, firstly to the study of Osteology, which means a knowledge of the bones, both as regards their number, form, physical properties, and chemical composition, and having obtained a tolerable idea of the skeleton, next turn thèir attention to Myology, or the study of the muscles, the active agents in progression, respiration, and various other functions; and afterwards dissect the other organs which go to make up the entire animal body.

My experience in this department is somewhat extensive, for I believe, from the period I first entered this institution up to about five years ago, I occupied the greater part of every session in the dissecting-room; and I have always found that those pupils who spent the largest portion of their time there, either in dissecting or looking on, were, as a rule, the most proficient, not only in anatomy, but in every other division of their studies. It is almost impossible to remain in such a locality for any length of time without learning something worth storing up. Turn your eyes which way you will, you see organs exposed to view, while your ear will be assailed by the demonstrator's explanations of parts dissected, or in informing the young beginner how he ought to proceed; or you

may hear a cluster of pupils discussing some knotty point in physiology, or testing each other's knowledge on some other scientific question. I have often heard complaints of the state of the atmosphere in the dissecting-room. I admit it is not very agreeable, but those that have complained have generally been idlers. Those that thirst after knowledge have their minds so much engaged that they have no time to think about bad smells; the air of the dissecting-room, to them, if not agreeable, is certainly not noticed. Many a time have I witnessed pupils busy in dissecting some half-decomposed subject until late in the day, even after most of the others had left the College altogether, and on the following morning known them hasten again to the same subject, anxious to complete the tracing out of some blood-vessels or nerves, left half-finished the night before. In this way they work on, reaping a rich harvest, and striving to gather in all the knowledge they could before the session closed upon them. Such workers never fail in having their reward. Another word about the dissecting-room. When you enter it for the purpose of pursuing the object for which it was intended, let it be with feelings of the importance of scientific research. The information you will them obtain will enable you to master and understand other branches of your study, and when you commence the practice of your profession you will find it a very powerful ally in assisting you in diagnosing diseases, and in many ways giving you an advantage you could not otherwise possess.

I hope the senior pupils will feel it a part of their duty to give every information to the junior ones; or, whether they be junior or senior, that those who are *better up* than others will take every opportunity in affording assistance by explaining all they can to those who are not so proficient. Not only, do I hope, they will do this, but by good example and precept do all in their power to preserve order and gentlemanly conduct. In this way, as far as the dissecting-room is concerned, you will be co-operating with your teachers.

Now let me impress upon your minds the importance of being present at all the *post-mortem* examinations you can; for by so doing you will become familiar with the alterations in structure produced by disease, while you must also endeavour to connect, as far as possible, the symptoms you observed during the life of the animal with those alterations. You will find considerable practice required, and also close observation, to become familiar with the morbid appearances

of the various organs in different stages of disease and in different diseases. Morbid anatomy is of great importance in confirming, or otherwise, such diagnosis as may have been given, which will have an important influence in future cases.

I ought not to omit to name, in association with clinical instruction, that much practical information may be obtained within the College walls by witnessing the examination of horses as to their soundness, an opportunity which is frequently afforded, and which I should advise you to take advantage of. It is a practice calculated to train the mind to detect unsoundness with a certain degree of pecision, and what are commonly called leisure hours should be devoted to this pursuit. The veterinary surgeon, called upon as he frequently is to give evidence in courts of justice, needs to be familiar with all peculiarities which legally constitute unsoundness. He should also be able to give an opinion, in cases where a horse is not *legally* sound, whether he is likely to be so for all practical purposes, or to what extent he is serviceable. He is also often requested to give an opinion, as to the suitability of a horse for particular purposes. On these points he will be able to gain much information. I should hope that you will not hesitate to ask any questions on this subject (or, indeed, on any others connected with your professional studies) that you may feel desirous of having answered; for you may rely on the willingness of your teachers to give you all the information in their power, consistent with the time at their command. Discretion on your part will point out what particular time, during the examination of a horse, it would be most suitable, and also most convenient, to ask such questions. You may, with great advantage, interrogate each other respecting certain points upon which opinions may not accord; and should these differences arise, you can always appeal to the professor in attendance, who will, to the best of his ability, decide the point at issue. In questioning each other, take care to do it in a friendly, kind, and gentlemanly manner. In this way you may train the mind and sharpen the intellect.

I have yet one subject to refer to, viz., the Veterinary Medical Association—an institution, in my opinion, of the greatest importance. Its meetings are held every Tuesday evening, when the members assemble for the purpose of discussing the particulars of any case, with or without, as may be

morbid specimens that may have been sent by practitioners. Essays are also read by its members, of which due notice is given; and at the end of each session the essays are placed in the hands of the council of the Society, when the authors of those that are thought to contain sufficient merit are awarded certificates of honour. This association has a very extensive library, the books of which can be obtained on the terms mentioned in the copy of rules which is furnished to each member. I cannot but regret that its meetings of late years have not been better attended by practitioners. For the last few years it has been altogether in the hands of the pupils; and although much good has been derived from the discussions that have weekly taken place, I, nevertheless, must think that an admixture of practitioners and students would be mutually beneficial. A society of this kind deals with the intellect of its members, and the resources of the matured mind are thereby developed. The results of long experience, and observance of disease in all its phases, are brought to bear upon the discussions of the various subjects which, from time to time, are laid before its members. It might therefore be a focal point, from which the product of deep thought, based upon practical experience, would emanate.

Gentlemen, having pointed out, as briefly as time will permit, some of the most important points in the several divisions of your studies, let me now say a few words to you respecting your conduct while within these walls. These observations will embody thoughts and reflections, the result of many years' experience among the students of veterinary medicine, and are offered with the best intentions, as guides to success.

The class, as a rule, in many respects, is of a mixed character. In the first place, about one half have already been one session at the institution, and are therefore initiated into the ways of College life. The other part, who are but just entered, must find many things strange, and can scarcely comprehend what they are to do; to these I say, let not this deter you from taking note of all you think interesting, and, like a traveller in a strange land, be stimulated by the novelty of what you observe. Seek the acquaintance of the senior pupils, who will be pleased to give you any information they can; ask questions of the professors whenever you require their aid; refer to your books, and you will soon find that all will become clear. Make arrangements for spending the whole of each day at the College, where your time may be profitably occupied.

I have so often noticed that those who think they can read up, as it is termed, on this or that subject, at their own homes, generally fail to do so. Some temptation or other draws them away, in spite of any resolution they may have made to the contrary. During the day, you will find sufficient to occupy your time; for remember, that you will have three lectures daily, and I should advise you to attend them all. Those who can take notes of the heads of what their teachers may be lecturing upon should by all means do so. There are those, however, who cannot do this with any advantage, but are more impressed with the subject of the discourse by strict attention only. In such instances it would be unwise to take notes at the time that the lecture is being delivered; but as soon as possible after it is terminated, as much as can be remembered should be committed to paper. Between the lectures, and during the after part of the day, your time may be spent in attending to clinical instructions, carefully watching the progress of cases, and making memoranda of the symptoms you may observe, and of the treatment the professor in attendance may order. This you may enter in a private case-book, kept for the purpose. During the evening you will do well in arranging these notes, as well as those of the lectures. Should you have any time to spare, devote it to reading some elementary works, for example, such as have a bearing on the subject contained in the lectures, or such as may refer to the pathology and treatment of particular cases in the infirmary. If you adopt a course something like this, and carry it out methodically, taking care not to miss any of the lectures or attendance on cases, you will find that you become deeply interested, your memory will become strengthened, you will have a book of reference within you, and a feeling of pride that you have carefully employed opportunities which, to most of you, will not be met with again.

Many of you may say, "Am I to have no leisure time?" Gentlemen, you have leisure time, which, if you neglect to use, will never return. Your leisure time must be occupied in laying a solid foundation, upon which in after life you may erect a superstructure which shall proclaim a well-spent life. Remember, "there is a season for the ear to swell, and the seed to ripen, as well as for the harvest and the in-gathering," and the one cannot take place without the other effectually prospers. After a time you will have the cares of practice, with its engagements and responsibilities; you will then have no

leisure time for study, or, at any rate, not so much as you will find you need. If you miss the present opportunity, it will never return; you will also have lost the desire for study, and perhaps the power, and will then look back with regret that the period of your pupilage was not better spent. Then you will say to yourself "How short is life, how valuable is time!" Gentlemen, you have no leisure, in the sense usually understood, nor have any of us; and remember, "the used key is always bright," and that "it is better to wear out than rust out."

Should the mind become wearied with the study of medical books, lay them down for a time, and seek relaxation in the perusal of such as have been the delight and solace of good and great men in all ages; such works are those of history, philosophy, biography, natural history, &c. But do not be induced by any one, however plausible their arguments may be, to read novels. I mean during your pupilage; and if not read at all throughout life, so much the better. You may depend upon it, that time so spent is lost; and time is valuable. And, however much you may admire a play or a concert, make up your minds to keep away from them. One night at a theatre will often displace from the tablet of the memory the product of a week's hard study, to make up which you must work twice as hard as you need otherwise do. It is in this way that the brain becomes taxed to an extent it ought not to be; the excitement of the play, and the intensity of study to make up lost time, impose a double duty on this organ, and, in addition, there is the danger of gradually, if not suddenly, sliding, as it were, into extreme folly, and, perhaps, what is worse, into vice. A mind preoccupied by what is really useful and good is, with a very great many, the only safeguard against these quicksands. I do not say that a proper amount of recreation and congenial conversation with friends is not beneficial and proper. I feel that it is so; nevertheless, great care must be taken to avoid those who might lead you from the paths of rectitude.

It is usual on occasions like this to allude to such works as are thought advisable for you to read, but at the present time these are so numerous that it is difficult to say which you ought to select. During your pupilage I think it would be unwise to encumber yourselves with too many, especially those on the same subject. I should advise you never to keep by you for reading more than two, and, on some subjects, not more than one book.

At the present time we are but scantily supplied with works on the Anatomy of the Horse, a defect which we hope will not long continue, and not only this be removed, but also the great one of our having no standard work as a text-book on the anatomy of domesticated animals.

With reference to the latter subject, although of great importance perhaps in a practical point of view, a knowledge of the general anatomy of these animals is actually not so necessary. As far as visceral anatomy of these animals is concerned, it will, however, be entered into by your teachers quite as fully as that of the horse, and you will be expected to understand it quite as well; I therefore advise you to use every means within your reach to acquire it. Having, however, obtained a general knowledge of the nature of the viscera of one animal, you will be better able to understand that of any other. The book of nature is sure to be correct, and if her works are well looked at and frequently studied, they are far better than any other source of information.

With reference to the study of physiology, I should recommend to you only two or three works, viz., 1st, Kirks and Paget's 'Manual of Physiology;" 2ndly, a small work, but a very good one, by Dr. Bennett; and, 3rdly, a manual on the same science by Dr. Carpenter, and 'Physiological Anatomy,' a work in two volumes, by Todd and Bowman. In these you will find all the matter you require. I might mention others, but I should advise you not to consult too many, as your mind might thereby be confused.

On the subject of pathlogical anatomy you cannot do better than consult a work, in two volumes, by Paget. For structural anatomy and the anatomy of particular organs, by all means make use of the work by Dr. Sharpey and Professor Ellis. As far as my own lectures are concered on these subjects, I make this my text-book. With regard to works relating to pharmacy, materia medica, and chemistry, I shall leave the naming of them entirely in the hand of your teacher, who is much more able than myself to point out such as he thinks best.

Thus, gentlemen, I have endeavoured to convey to you, imperfectly I fear, an idea of the importance of acquiring all the knowledge you possibly can, appertaining to the profession you have chosen. I sincerely hope that the remarks I have made may act as incentives to industry, and also inducements to steady exertion, both during your pupilage and in after life, to uphold and support, not only the character of the profession, but also your own. You may think, perhaps, from what you have been told, that the public are in-

different to the science of veterinary medicine, and that our services are not so highly appreciated as they ought to be. I believe this is a great error, at any rate, I hope it is. I can assure you that a veterinary surgeon, possessing such qualifications as I have portrayed, is very much respected, and to show that it is so, you will remember what I stated with reference to an army veterinary surgeon, and the assurance I gave you that there are plenty of instances of a similar kind.

On my right and on my left I observe several members of our profession whose moral position in society and professional reputation will bear the strictest scrutiny; and plenty of other examples, in private practice, can be met with in every county in Great Britain and Ireland. I trust you will use all your energies to preserve this standard, which you will assuredly accomplish if you carry out this noble principle, "Do everything that becomes a man, and avoid everything that can degrade him." Make this precept a focal point, upon which every act of your life shall turn. Let all your investigations be actuated by a love of truth; Lord Bacon said that "the essential form of knowledge is nothing but the representation of truth." Never, for the sake of money, undertake to cure that which you believe to be incurable, nor exaggerate trifling diseases to make them profitable, nor attempt to take credit were none belongs to you; and, above all, never attempt to raise or even support your own reputation at the expense of another's. Let these thoughts be ever present in your mind, and a desire to persevere in honorable exertions will be strengthened. Remember, I again say, that noble principle just quoted:—"Do everything that becomes a man, and avoid everything that can degrade him."

EVIDENCES OF THE ANTIQUITY OF ATTACHING THE SHOE TO THE FOOT OF THE HORSE BY NAILS.

By M. J. Harpley, V.S., Royal Horse Guards.

Dear Sirs,—During some leisure hours spent in the reading-room of the British Museum I came across a paper on "Horse-shoes" in one of the 'Journals of the Archælogical Association,' which seemed to be of sufficient interest and importance to warrant its reprint in your valuable Journal. It is from the pen of H. Syer Cuming, Esq., one of the Honorary Secretaries of the Association (to which I have the honour to belong), and was read as an ordinary paper at one of the meetings, and was described by the author as containing "examples, accompanied with some rough notes, in the hope of exciting an interest in this curious but neglected subject."

I am, dear Sirs,
Yours very truly.

To the Editors of 'The Veterinarian.'

ON HORSE-SHOES.

By H. Syer Cuming, Esq.

From the 'Journal of the Archæological Association.' vol. vi.

The slight attention which has hitherto been paid by archæologists to the history of horse-shoes has induced me to bring before the association a few old examples, accompanied with some rough notes, in the hope of exciting an interest in this curious but neglected subject.

The Centauri, a people of Thessalia, were, in all probability, the first who secured and reduced the wild horse to the service of man; hence arose the fable of the Centaurs, who were represented as half man and half horse.

For a time the horse was employed without any protection to its hoofs; but the rider must have soon discovered that they became injured by long journeys over rugged ground, and every care was therefore taken to obtain horses with the

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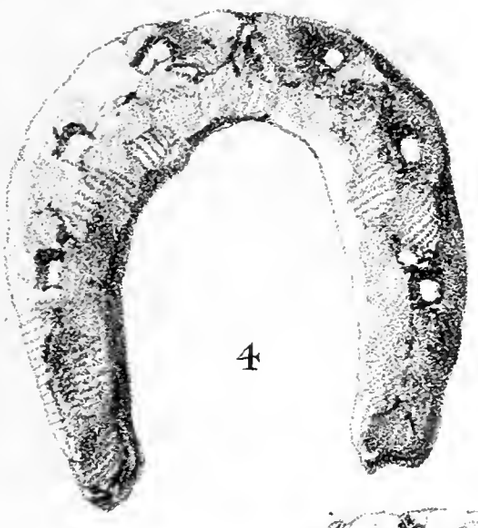

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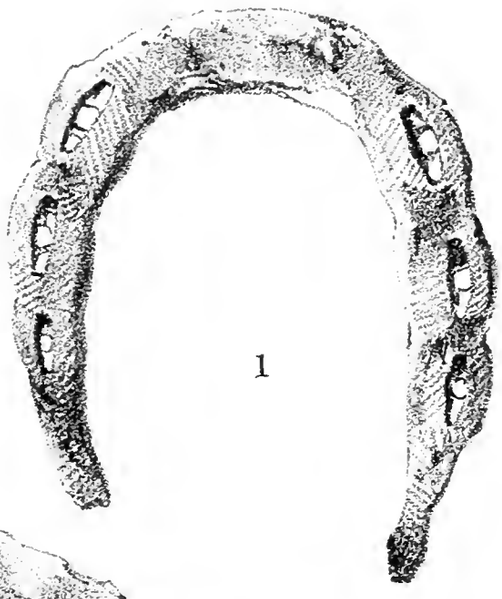

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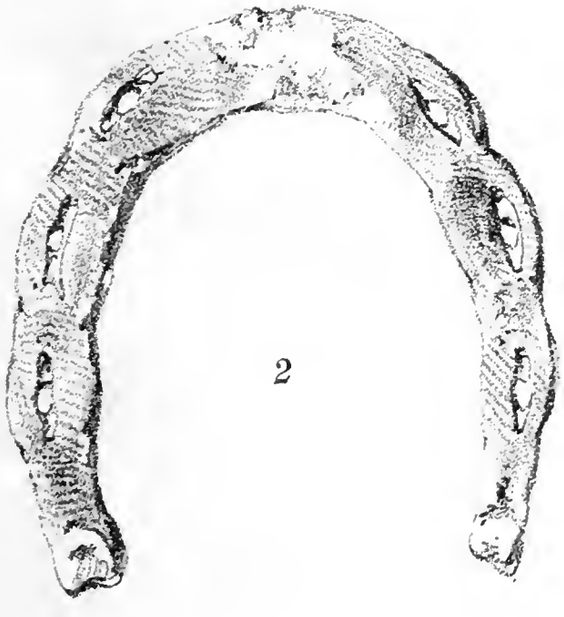

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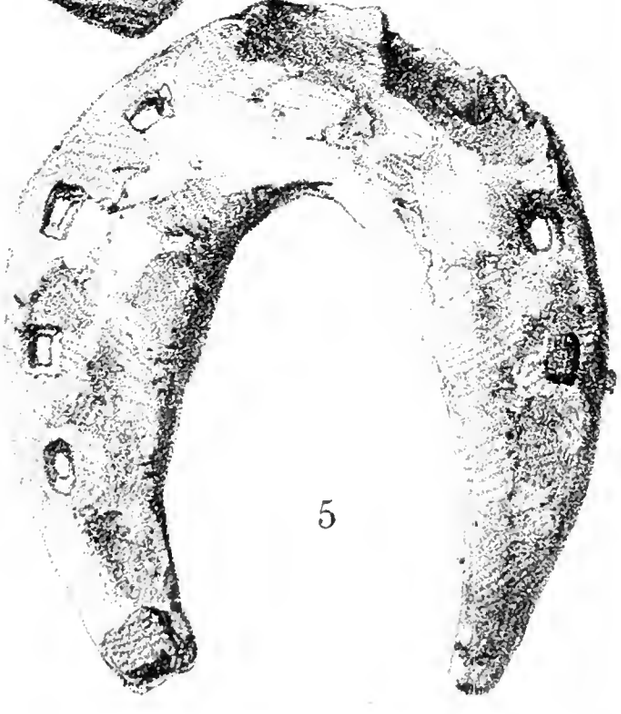

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strongest hoofs, and every means was resorted to to render them hard.*

Ancient authors speak of horses becoming useless after travelling a long distance. According to Diodorus Siculus (lib. xvii, 94), the horses in the army of Alexander the Great had their hoofs totally broken and destroyed by uninterrupted travelling.

And Appian (in his '*De Bello Mithridat.*')† relates that when Mithridates, King of Pontus, was besieging Cyzicus, he was forced to dispense with the use of his cavalry, because the hoofs of the horses were entirely worn out.

These instances show how necessary it was to provide some strong defence for the hoof; and various contrivances seem to have been resorted to for this purpose at an early period.

Amongst the first were probably shoes which inclosed the whole hoof, and which were woven of hemp, rushes, &c. The Romans called this kind of shoe "*solea spartea*,"‡ from its being made of the Spanish broom, *spartum*. It probably closely resembled the horse-shoe still in use in Japan, which consists of a basket in the form of a hoof, which is put upon the foot of the animal, and tied round the fetlock with a cord.

Kæmpfer, who visited Japan in 1690 and 1691, says, in his history of that country, that "The horses' shoes are made of straw, and are fastened with ropes of the same to the feet of the horses, instead of iron shoes, such as ours in Europe, which are not used in this country. As the roads are slippery and full of stones, these shoes are soon worn out, so that it is often necessary to change them. For this purpose those that have the care of the horses always carry with them a sufficient quantity. They may, however, be found in all the villages, and poor children who beg on the road even offer them for sale, so that it may be said there are more farriers in this country than any other, though, to speak properly, there are none at all."

The *solea sparteæ* must have required continual renewing in the course of a journey, and no doubt soon led to a more durable contrivance, for we find mention made of *soleæ ferreæ* or iron shoes,§ and even shoes of more costly materials.

* For contrivances to make the hoofs of horses harder and more durable, see Xenophon, '*De re Equestri*,' cap. iv; and Vegetius, lib. i, cap. lvi, 2; and cap. xxviii and xxx; also, lib. ii, cap. lvii and lviii.

† Edit. Tollii, p. 371.

‡ See Columell, vi, 12, 3; and Vegetius, *Vet.*, lib. i, 26, 3; lib. ii, 45, 3.

§ Catullus, xvii, 26.

Suetonius says that Nero had his mules shod with silver,* and Pliny tells us that his Empress Poppæa had hers shod with gold.† But of what form were these metallic shoes? Were they an addition to the basket-work covering of the hoof, or did they resemble those of modern times?

Mr. A. Rich, in his 'Companion to the Latin Dictionary and Greek Lexicon,' observes that "the concurrent testimony of antiquity, both written, sculptured, and painted, bears undeniable evidence to the fact that neither the Greeks, nor the Romans, were in the habit of shoeing their animals by nailing a piece of iron on to the hoof as we now do."‡

The contrivance they employed was probably a sock made of leather, or some such material, being passed under and over the foot, and bound round the pastern joint and shank of the animal by thongs of leather, like the *carbatinæ* of the peasantry. The sock was not permanently worn, but was put on by the driver during the journey, in places or upon occasions when the state of the roads required, and taken off again when no longer necessary. When the underneath part of the sock was strengthened by a piece of iron, it was termed *solea ferrea*. It is consequently an iron plate of this kind which Catullus speaks of as being left in the mud, by getting detached from the sock under which it was fastened, and not one nailed on to the hoof, like a modern horse-shoe.

Our late vice-president, Sir S. Meyrick, in his 'Critical

* "Nunquam carusis minus mille fecisse iter traditur, soleis mularum argenteis." (Sueton., 'Vita Neronis,' cap. xxx.)

† "Nostra ætate Poppæa, conjux Neronis principis, delicatioribus jumentis suis soleas ex auro quoque inducere." (Plin., '*Hist. Nat.*,' lib. xxxiii, cap, xi.) An example of this ancient ostentation occurred as late as the eleventh century. It is related of Boniface, Marquis of Tuscany, one of the richest princes of his time, that when he went to meet Beatrix, his bride, mother of the well-known Matilda, about the year 1038, his whole train was so magnificently decorated, that his horses were not shod with iron, but with silver; the nails even were of the same metal, and when any of them dropped out they belonged to those that found them. (See '*Vita Mathildis, a Donizone Scripta*,' cap. xi.)

The life of Matilda is given in 'Leibnitii *Scriptores Brunsuicensis*,' vol i, p. 629; and also in 'Muratori *Rerum Italicarum Scriptores*,' Mediolani, 1724, vol. v, p. 353. The anecdote is likewise to be found in Beckmann, vol. ii, p. 291, ed. 1817.

I have somewhere read a story of an English ambassador to the Court of Paris, who had his horse shod with silver shoes, but so slightly nailed to the hoof that they soon came off, and became the prize of the gazers.

‡ Does not Homer allude to shoes when he speaks of "brazen-footed horses" (χαλκοποδες ἱπποι). ('Iliad,' xiii, 23, and viii, 41.) Mr. Cureton informs me that he has seen horse-shoes of bronze. In the ninth century the Greeks called the iron horse-shoe σελεναια, and the nails with which it was fixed καφφια. (See the '*Tactica* of the Emperor Leo,' lib. iv, p. 51.)

Inquiry into Ancient Arms and Armour,' vol. i, p. 10, tells us that "the Normans introduced the art of shoeing horses as at present practised in England; for, though the Britons had been taught the use of them by the Romans, their *pedolau* were probably considered too clumsy to be adopted by the Saxons."

The Roman horse-shoe, or *pedillum*, lapped over and was tied round the hoof of the horse, and therefore occasioned a rattling sound. Positive as these assertions are, we may yet be pardoned for inquiring whether there be not some evidence of the employment of the modern-fashioned horse-shoe at an earlier period than the Norman conquest, or even in the time of the Roman occupation of Britain. The Romans might, and probably did at first, attach a metallic sole to the sock of their horses, but afterwards they secured the shoe to the hoof with nails.

Beger, in his '*Thesaur. Elect. Brandenburg*,' vol. iii, p. 597, has figured a family coin of bronze, on the obverse of which are two snakes with their tails entwined, and between them two horse-shoes of a plain, arched form, each pierced with eight nail-holes, and having calkins at their heels; on the reverse is a tree between the words IO, IO, and the legend TRIVMP. (*he*). By whom, or on what occasion, this curious medal was struck is doubtful, but certain it is that this is one of the earliest indications of the modern-fashioned horse-shoe that we meet with on any Roman monuments.

In the '*Archæologie*,' vol. xiv, p. 4, mention is made of the discovery at Colney, in Norfolk, of Roman urns, iron spear-heads, and "a horse-shoe of unusual shape, round, and broad in front, narrowing very much backward, and having its extreme ends brought almost close behind, and rather pointed inwards, with the nail-holes still perfect." It is to be regretted that no engraving is given of this shoe.

In making an excavation at Lothbury on July 5th, 1847, at the depth of sixteen feet below the surface, the workmen came upon a number of Roman *reliquiæ*, consisting of iron keys, Samien and other pottery, and various other articles, amongst which was the iron horse-shoe (See plate fig. 1).

It is of small size, measuring about only three inches six eighths long, three inches five eighths wide, and about three quarters of an inch at the broadest part of the toe, narrowing very much at the ends.

It is rather thin, having on each side three deep, oblong indentations, punched in such a way as to cause the outer edge to bulge, and in the centre of these hollows are the nail-holes, which are of a rather square form.

The interior of the shoe is in the shape of a Norman arch of the twelfth century. The peculiar make of this horse-shoe, the depth at which it was discovered, and it being mingled with undoubted Roman remains, prove that it must be of high antiquity, pointing to the Roman British period as the age of its fabrication.

Another horse-shoe of iron (fig. 2) is much of the same fashion as the one exhumed in Lothbury, but of rather larger size, measuring about four and a quarter inches long. It is perforated for six nails, bulges at the outer edges, and has prominent calkins at the heels, made by doubling over the iron and welding it.

It was discovered some years back in Moorfields, in the line of the Old London Wall. In the British Museum is an iron horse-shoe, which may safely be regarded as belonging to the same age as the two examples before us. It was found with fragments of Roman pottery, boar's teeth, &c., in making the sewer in Fenchurch Street in 1833.

M. Roach Smith informs me that a horse-shoe has been discovered within the Roman encampment on Hod Hill, Dorsetshire. If these specimens exhumed along with Roman remains, do not establish the fact of their Roman origin, they are nevertheless sufficient to make us pause ere we assent to the notion that the Romans were unacquainted with the modern practice of horse-shoeing.

Two exceedingly curious horse-shoes, similar to those found in London, were discovered some years back near Sidbury Hill, in Wiltshire; two or three very large headed nails remained in the holes, and were singularly beat round, showing that they were clenched after being driven through the hoof of the horse. Mr. Bracy Clark published a plate and short account of these shoes.

That the Britains were familiar with some kind of protection for the hoofs of their horses, either at the time of the Roman invasion or soon after it, is evident from their possessing a name for such an article. They called the horse-shoe *pedol*, pl. *pedolau*, from the Celtic *ped*, a foot. Fosbrooke states that "Sir R. C. Hoare found the half of two horse-shoes in a British barrow" in Wiltshire.

It is said that horse-shoes have been found in the graves of some of the old Germans and Vandals, in the northern countries, but their age has not been determined.*

In the British Museum is an ancient iron shoe, found in a mine in Hungary, which had been encrusted with copper from long lying in water impregnated with that substance. It is

* Beckmann, vol. ii, p. 293, ed. 1817.

of a small size, broader than the shoes found in Lothbury and Moorfields, is pierced with square nail-holes, and the heels beat up into calkins, calks, caukers, or cramps, as the points at the extremities of the quarters are termed.*

The earliest horse-shoe, the date that can be fixed with precision, is that which was discovered in the tomb of Childeric, King of France, at Tournay, in 1653. He succeeded his father Meroveus in 458, and died in 481. This shoe was of iron, of a small size; and if we are to trust the representation given of it by Montfaucon in his '*Monumens de la Monarchie Française*,' p. 235, it much resembles the one found in Hungary. It had four square nail-holes on each side, and calkins at the heels.

If, then, the Germans, the Vandals, and the Franks, employed iron shoes which were nailed on the foot of their horses, we might naturally expect to find them in use amongst the cosanguinei, the Saxons.

There is, however, but slight evidence that they shod their horses in the modern manner; I have, indeed, seen a shoe very like in form to that found in the grave of Childeric, which was said to have been discovered with Saxon weapons in Kent. It was of a small size, very thin, and much oxidized. Dart, in his '*Eboracum*,' page 84, states that at Battle Flats, six miles east of York, the scene of a conflict between Harold and the Norwegian invaders, 1066, are frequently found in ploughing a very small sort of horse-shoes, which would only fit an ass or the least breed of northern horses. These circumstances would incline us to think that the Teutons shod their horses.

The idea that the Normans introduced the practice of shoeing horses in England probably arose from the great importance that they seemed to attach to farriery, which is clearly evinced by the privilege granted to certain persons for attending to the shoeing of the royal horses. It is said that Henry de Farrariis, or Ferrers, who came over with the Conqueror, received his surname from being intrusted with the inspection of the farriers, and that the king bestowed upon him the honour of Tutbury, in the county of Stafford. It is also recorded that William the Conqueror gave to Simon St. Liz, a noble Norman, the town of Northampton, and the whole hundred of Falkley, then valued at £40 per annum, to provide shoes for his horses.†

We also find it stated that Gamelhere held two carucates of

* It is engraved by Rymsdyk, in the '*Museum Britannicum*,' tab. ix, p. 26.

† 'Dugd. Bar.,' i, 58.

land in Cuckeney, county Nottingham, of the king, *in capite*, for the service of shoeing the king's palfreys, upon four feet, with the king's nails, or shoeing materials, as oft as he should be at his manor of Mansfield; and if he put in all the nails, the king should give him a palfrey of four marks; or he was to have the king's palfrey, giving him five marks of silver, as the jury, 3 Edw. III, found the service;* as he was also, if he lamed the horse, pricked him, or shod him strait, &c., *inclaudet*, or *includet*, as it was found 23 Edw. I, not so agreeably.†

We learn from the 'Plac. Cor.,' 13 Edw. I, that "Henry de Averyng held the manor of Morton, in the county of Essex, *in capite* of our lord the king, by the sergeantry of finding a man with a horse, value ten shillings, and four horse-shoes, one sack of barley, and one iron buckle, as oft as it may happen that our lord the king should go with his army into Wales, at his own proper expense, for forty days."‡

The above notices manifest the importance attached to farriery by our early monarchs. The oldest horse-shoes with which we are acquainted are of small size, nor must we look for large ones until the commencement of the thirteenth century, when the stout Flemish breed of horses began to be imported into this country. The earliest figure of a mediæval horse-shoe that I have been able to find is of the time of Henry III, and occurs upon the seal of Walter Marshall, seventh Earl of Pembroke, who died in the keep of Goodrich Castle, in 1246. It is represented as formed of a bar of equal breadth throughout, with calkins at the heels, and pierced on each side with four square holes for the nails. Within the shoe is shown one of the long nails used in attaching it to the foot (see fig. 3).§ On a seal of the time of Edward III, belonging to the corporation of Gloucester, there is on each side of the king's head a horse-shoe, and also several nails. Guillim, speaking of the horse-shoe as an armorial ensign, says, "This bearing of horse-shoe in armoury is very ancient, as the arms of Robert Ferrers, Earl Ferrers, testifieth, who lived in the time of King Stephen, and who bore for his arms, argent; six horse-shoes, sable."

The figure of a horse-shoe was painted on a wooden shield, against which the burgesses and yeomen used to tilt on foot, the rules of chivalry not admitting any person under the

* 'Esc.,' 3 E. III, p. 108.

† Thornton's 'Nottinghamshire,' p. 447.

‡ Meyrick's 'Critical Inquiry,' vol. i, p. 11.

§ The original matrix is in the collection at Goodrich Court. Sir S. R. Meyrick informed me that it "was struck up by the iron shoe-heel of a boy while trying the extent he could jump."

rank of an esquire to enter the lists as a combatant at the jousts and tournaments.* In a manuscript in the Bodleian Library, No. 264, dated 1344, there are delineations of both the fixed and moveable quintain, upon each of which a large horse-shoe is painted, but of a form varying very much from that of the shoes found with Roman remains, or in the tomb of Childeric, or on the seal of the Earl of Pembroke. The shoes depicted in the manuscript are remarkable for their length, their equal breadth, their ends turned out and somewhat upwards, and from being pierced with nail-holes throughout their entire length. It is this formed horse-shoe which is generally met with in heraldry, and which, according to Guillim, is borne by the families of Borlace, Cripps, Crispe, Ferrers, Randall, and Shoyswell, and is also seen in the arms of the Company of Farriers.†

But Guillim figures the horse-shoe in the arms of Okeham of a different shape, being almost a circle, with eight square nail-holes placed at nearly equal distances. He says of Okeham, that it is "the chief town of Rutlandshire, seated in a rich valley, and indifferent good and well-inhabited town. Here is an ancient privilege or custom which the inhabitants claim, that is, if any nobleman enter precinct or lordship, as an homage, he is to forfeit one of his horse's shoes, unless he redeem it with money; and the truth of this is apparent by the many horse-shoes nailed upon the shire hall door; and their badge is a horse-shoe."

This custom appears to have reference to the original possessors of the estate, and De Ferrers, who bore six horse-shoes in their escutcheon. There were formerly to be seen some very curious horse-shoes nailed to the hall door, some of which were gilt, and a few had the name of the donor stamped on them. One of the old Okeham shoes was preserved in the Leverian Museum, but it was wrongly described as being "taken from the old castle of Okingham, Berks, where it is the custom of every nobleman who passes that way the first time after succeeding to his title to present one to the lord of the manor."‡

We may here mention a curious septennial custom regarding a horse-shoe still observed in the city of Lancaster. It was stated, in a number of the *Preston Pilot*, in 1834, "that a

* Strutt's 'Sports and Pastimes,' p. 117, ed. 1838.

† This company bear for their arms, argent, three horse-shoes, sable. We may here note that St. Eloy, Eligius, or Euloge, Bishop of Noyou, is the patron saint of farriers.

‡ The Leverian collection contains a curious series of horse-shoes, which are enumerated in the 'Companion to the Museum.' pp. 2, 3.

large assembly congregated for the purpose of witnessing the renewing of the horse-shoe at the Horse-shoe Corner, Lancaster, when the old shoe was taken up and a new one put down, with 1834 engraved on it. Those who assembled to witness the ceremony were entertained with nut-brown ale, &c.; afterwards they had a merry chairing, and then retired. In the evening they were again entertained with a good substantial supper. This custom is supposed to have originated at the time John o'Gaunt came into the town upon a noble charger, which lost its shoe at this place. The shoe was taken up and fixed in the middle of the street, and has ever since been replaced with a new one every seventh year, at the expense of the townsmen who reside near the place."

The most ancient horse-shoe found in this country appears to have left the frog of the hoof much more exposed than was done in later times; for after the middle of the fourteenth century the central opening of the shoe seems to have been made more contracted. An early example of this change is shown in a little specimen which was discovered in Fleet Ditch in 1847 (see fig. 4). The inner edge no longer presents the figure of a Norman arch, which seems to be the character of the older shoes, but that of the pointed arch of the fifteenth century, thus giving an increased covering to the hoof. This specimen is very thin, made without calkins, and is pierced with six square nail-holes.

During a long period—almost to the sixteenth century—is was the fashion to secure the shoes to the hoofs of the horses with large-headed nails, generally of a square form, and of such a size that they are distinctly shown in several old illuminations. In excavating for the sewer in the Walworth Road, in 1825, the workmen discovered, at the depth of ten feet, some bones of a horse, and a large iron shoe (see fig. 5). The inner part of it is much like a Gothic arch of the thirteenth century in form.*

It is pierced with seven or eight holes, in one of which a nail still remains, which is driven in as far as it will go; but the broad end is of such a size that it projects nearly three eighths of an inch from the surface of the shoe, in the way indicated in the figure of the horse upon which Henry VIII rides, given in a tournament roll in the Herald's College, bearing date 1511.†

* I may here state, that whenever I have compared the form of a shoe to a Gothic arch of a certain period, I do not mean to imply that it is of the same age, but only resembling it in figure.

† An engraving of this figure is given in Dallaway's 'Inquiries into the Origin and Progress of the Science of Heraldry in England,' 1793, p. 179.

Whatever form the horse-shoe may be, if it is provided with a sunken groove round the margin to admit of the heads of the nails, its great antiquity must be looked upon as questionable. One of the earliest examples that I have seen with a groove is represented in fig. 6. It was found ten feet deep in the Walworth sewer, but differs altogether in the form from the other specimens discovered in this locality, and is palpably of a much later date. It is of a large size, nearly circular, with a broad surface, grooved close to the edge, and pierced for eight nails; it is stamped with the letters H. I., and it has calkins at the heels; this shoe is of German manufacture, and, from the fashion of a buckle found with it, we are justified in assigning it to the first half of the seventeenth century. A similar shoe to the above was found, twelve or fourteen feet deep, in making the sewer by the "Plough and Harrow" public-house, Kennington Lane. Various minor changes have taken place in the fashion of horse-shoes during the eighteenth and nineteenth centuries, and the names of Clark, St. Bel, Taplin, Coleman, Moorcroft, and others, have become famous for their suggestions in regard to the form of the shoe best suited to the hoof of the horse; but it is quite beyond our province to enter upon these details.

There are few objects the dates of which are so difficult to fix as those of horse-shoes. Not but that great and marked changes have taken place in their form and fabric, as may easily be seen by comparing the earliest with the latest of those alluded to; but the difficulty lies in the fact that no one has attempted to follow out the subject in a truly archæological spirit.

In the present state of our knowledge it is almost impossible to ascertain the age of a horse-shoe, unless it be found accompanied with some relic which points to the period. The most certain way of arriving at a knowledge of the dates of horse-shoes will be to try and exhume them from our old battle-fields. Specimens obtained from such localities would afford us invaluable assistance in the endeavours to establish their chronology.

Little change has probably taken place in the fashion of horse-shoes in Asia and Africa for many years. In some parts of Bokhara the people shoe their horses with the antlers of the mountain deer. They form the horn into a suitable shape and fix it on the hoof with horn pins, never renewing it till fairly worn out.*

* See 'Mirror,' vol. xxv, p. 224.

In Egypt and the surrounding countries the horse-shoes are made of iron, much smaller and thinner than those of Europe, and nearly round, with a very small circular hole in the middle; the same fashion is also in use in Asiatic Turkey. In the museum of the United Service Institution are a pair of horse-shoes, with the nails used in fixing them, in common use in Syria; these form good examples of the Asiatic horse-shoe.

In conclusion, we may observe that some few years back the itinerant farrier used to wear across his breast a broad canvass belt, painted with yellow horse-shoes on a bright-blue ground; a person so accoutred is to be seen in Hogarth's 'Enraged Musician.'* The horse-doctor was also known by having a little iron shoe fastened in front of the hat.†

The farrier's smithy ‡ was once distinguished by a large iron horse-shoe being suspended above the door; it was sometimes gilt. The horse-shoe is still retained as a tavern sign; witness the "Horse-shoe Inn," Southwark; the "Horse-shoe," Goswell Street; the "Horse-shoe and Magpie," Fetter Lane; and the "Black Boy and Horse-shoe," Nicholas Lane.§

Throwing the horse-shoe used to be a favorite rustic pastime; but both in town and village the main use of the shoe, when not employed to protect the hoofs of horses, was as a charm against witches. Nailed either on, above, but most commonly below, the door of the dwelling, the cow-house, and the barn, it was believed to prevent the entrance of any of the weird sisterhood. The potent powers of the horse-shoe is alluded to by Butler in 'Hudibras' (book ii, chap iii, p. 291), where he declares of the conjuror that he could—

> "Chase evil spirits away by dint
> Of *Cickle Horse-shoe*, hollow flint."

Sir Walter Scott, too, makes mention of the employment of the horse-shoe as a charm against witches in his novel of

* The rat-catcher used to wear a similar blue belt, painted with large rats.

† The horse-shoe is still retained as the horse-doctor's sign; on the gate-post of the Talbot Inn, Southwark, is painted a yellow horse-shoe on a red ground, and the words, "Evans, Veterinary Surgeon, down this yard." On the gate-post of the White Hart Inn, there is also painted a horse-shoe, with the words, "Shepherd's Veterinary Forge."

‡ Fosbrook states that farriers "had, in 1267, open shops, as now, by the road-side. See Du Cange, v, 'Cluarium Travallum.' A farrier's paring and incision knife is engraved in 'Montfaucon,' iii, pp. 2, 6, v, c. 8.

§ The horse-shoe has not only been used as a sign, but has given name to certain localities, as, for instance, "Horse-shoe Court," Ludgate Hill; "Horse-shoe Alley," Moorfields, &c.

'Redgauntlet' (chap. v), where Summertrees, addressing Provost Crosbie, says, "Your wife's a witch, man; you should nail a horse-shoe on your chamber door."

It was once considered a good omen to find an old horse-shoe, for one thus acquired was regarded as being peculiarly efficacious against witches.* A miniature horse-shoe of gold was formerly worn as an amulet by ladies, and this bauble has of late been revived as an ornament for the modern-antique chatelaines. In 1848 the horse-shoe was adopted as the form of ladies' shawl-brooches; they were wrought of both polished steel and silver, and of a size large enough in some instances to have been nailed on to the hoof of a Shetland pony.

These reminiscences might be continued to an interminable length, but must now be brought to a close; for I do not pretend for an instant that these rough notes embody anything like a detailed history of horse-shoes. My only aim has been to show that the practice of shoeing horses in England is of a far higher antiquity than the eleventh century, and to bring forward a few ancient examples and remarks, with the hope of awaking the archæologist to an investigation of the subject, and to prove to you that some interest is even to be found in a "rusty old horse-shoe."

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 506.)

The consideration of the botanical characters of the plants which yield a supply of food for our domestic animals has already brought under our notice two of the three great divisions into which, according to the Linnean system, the vegetable kingdom is divided, viz., Exogens and Endogens, and the four principal characters of stem, leaf, flower, and embryo, by which they are distinguished from each other. We have also, in considering the different natural orders under which the plants are classed, been enabled to notice

* In the present day, in the south of Ireland, it is considered very fortunate to meet with a bit of old iron; it must be picked up and thrown over the left shoulder, "just to bring good luck" to the finder.

two of the subdivisions into which Exogens are divided, viz., *Thalamiflorœ* and *Calyciflorœ*, the former having "both calyx and corolla, the latter consisting of distinct petals, the stamens always *hypogynous* or *united to the sides of the ovary*;" the latter "having both calyx and corolla, having distinct petals, *stamens* always *perigynous* or *growing on the sides of the calyx*."

The description of the next important plant, from the extent of its cultivation and the large quantity of food it yields—the *Beta vulgaris* (or *mangold-wurzel*)—will enable us to become familiar with another subdivision of Exogens. The plant belongs to the class of Exogens and to the subdivision *Monochlamydeœ* ("*flowers having no corolla, and sometimes* not even a *calyx*"), and to the natural order *Chenopodiacea* (*goose-foots*), having "*calyx* herbaceous, sometimes tubular at the base, or none; *stamens* inserted into the base of the calyx, opposite its segments; *ovary* single superior, or occasionally adhering to the tube of the calyx, with a single *ovule* attached to the base of the cavity; *style* in two or four divisions, rarely simple; *fruit* membranous, sometimes baccate; *herbaceous* plants or *undershrubs*; *leaves* alternate, without stipules, occasionally opposite; *flowers* small, sometimes polygamous."—*Lindley*. The plant itself may be known by the following characters:—"*Beta vulgaris*.—Calyx five-parted, half-adhering to the ovarium at the base, stamens five, styles two. Fruit reniform, enveloped in the capsular base of the calyx. Roots fusiform, very fleshy, biennial, radical; leaves ovate, obtuse, somewhat cordate, those of the stem rhomboid-ovate spikes leafy."—*Lindley*. This, the common *beet*, is a plant familiar to most of us as being cultivated in our gardens, and was known to both Greeks and Romans, and held in great repute by them, as forming an article of diet, but the mangold-wurzel, which is considered by most botanists to be a variety of the common beet, was first cultivated as an article of food for cattle and for the manufacture of sugar in Germany and Switzerland. Its name, mangold-wurzel, is derived from the German, and means "the root of scarcity," but, as a writer on this subject has well observed, "the root of scarcity is not a scarce root, but a root for a time of scarcity." It was first introduced into this country from Switzerland about the year 1785 or 1786, and, as Mr. Newby writes, "this invaluable production may now be found in almost every civilised nation in the world where the climate is sufficiently temperate for its growth." There are two principal varieties cultivated in this country, viz., the *long* or *oblong* and the globe, the former being the best adapted to

the light, the latter for the heavier, class of soil. It will grow upon a great variety of soils, but thrives best on a deep, rich loam. The seed is generally planted in April or May, and the root attains its full growth towards the end of October. Mr. Newby says "that a pound of good seed is calculated to contain about 22,000. An acre of land, in eighteen-inch rows, the plants twelve inches apart, would contain 29,040 plants; if the roots weighed one pound each, on an average, there would be thirteen tons; if they weighed ten pounds each, 130 tons. These latter would furnish nine hundredweight, forty-eight pounds of well-grained, white, powder sugar, and 231 gallons of rectified spirits, besides the green leaves afforded for cattle, and the dregs after distillation for pigs." Both leaves and root are much liked by horses, oxen, sheep, and pigs, and afford them an exceedingly valuable supply of food. A system of removing the leaves from the plants, which is adopted in many parts, has, without doubt, an injurious effect upon the value of the root, for it has been well observed that "as long as a mangold leaf is in a fit state to be wholesome or useful as food for cattle, so long is it important to the well-being of the root." The root of the mangold is of great value to all kinds of stock, especially to milch cows, increasing both the quality and quantity of the milk, without imparting to it that disagreeable flavour which turnips frequently produce. The following is its composition:

Water	87·78
Flesh-forming constituents . .	1·54
Woody fibre	1·12
Sugar	6·10
Pectin, gum	2·50
Inorganic matters (ash) . . .	0·96

Much discussion has taken place in regard to its fattening properties, some asserting that it will fatten animals, while equally good authorities consider it worthless as fattening food, especially for sheep. That it possesses fattening properties the above will at once confirm, although, when given alone, from the large quantity of water it contains, very little benefit may result, but when mixed with some dry food, such as hay or straw, the beneficial effects will soon be produced. "Mangolds should not be given to animals before the end of December or beginning of January. The roots are found, when fresh taken up, to contain an acrid substance, tending to scour the animals which partake of it. The pectin, too, in old roots is found to change into sugar."

(*To be continued.*)

"GRASS-STAGGERS" SUPPOSED TO HAVE BEEN "LEAD-POISONING."

By A. J. McIntosh, Student, Edinburgh.

Gentlemen,—The cause of my present communication is a letter published in the last number of your Journal by Mr. Storrer, in which he states that the symptoms of grass-staggers communicated by me in your August number were not those of grass-staggers, but of lead-poisoning, and he there stigmatises my communication as one of a class "solely intended to bring the writers into notice;" all this he states without bringing forward the slightest proof as to the correctness of his statement. He makes an assertion, and says he is perfectly satisfied that the symptoms detailed were distinctly those of lead-poisoning, and brings forward no proof to show how he arrives at that conclusion, but would have us take for granted that it *must* be so, because he asserts it to be *his* opinion, which he insinuates is founded on twelve or fourteen years' experience. But that is not enough for the advanced readers of the *Veterinarian,* nor is it enough for students. If Professor Dick, or any other professor, in his lectures to his students were to make a statement without giving either a why or a wherefore, merely telling us in proof of its correctness that he had at least thirty years' experience, then would veterinary literature get to a fine crisis.

Mr. Storrer goes on to say that I subscribe myself a student, and yet detail treatment in the first person singular. Allow me to ask him, in what person ought I to have written? To have used the first person plural would have been presumption, for that is used exclusively by editors, kings, and clergymen, and there is no other person, either singular or plural, which I could honestly have used.

But the fact is, Mr. Storrer directs his undivided attention to my youth and inexperience, and seems more inclined to make a halting point for the young, than take the place of a teacher, and discuss the symptoms of lead-poisoning or grass-staggers (which a practitioner of twelve or fourteen years' standing ought to be able to do), and assist in doing away with the useless literature which he pretends so much to abhor.

I must now inform Mr. Storrer that the communication I forwarded to the *Veterinarian* was not sent with any egotistic views, "nor with any desire to bring myself into notice;" but seeing the disease so prevalent, and in many cases fatal,

throughout the country, I considered the statements I made might not be objectionable to any unprejudiced readers of the *Veterinarian*, and might induce some one to take up the subject who, in consequence of having twelve, fourteen, or even more years' experience, might be in a position to handle the subject more fully. But instead of that, nothing appeared but a criticism on youth and inexperience.

That the cases communicated by me were cases of grass-staggers I still remain perfectly satisfied, and I shall now state some of my reasons for doing so, and, not like Mr. Storrer, make an assertion without giving a single proof of its correctness more than leading one to suppose that he is a practitioner of twelve or fourteen years' standing, a line of argument to which I (being obliged to use the first person singular again) am not inclined to attach much importance. He states that the cases I described were distinctly those of lead-poisoning. Now, before symptoms of lead-poisoning could be present, lead, in some of its compounds, must have entered the body of the animals, either in the food or water which they consumed. In the first case I described the animal was supplied with water from a pond which had no communication with any lead pipes whatever. The land upon which the animal was feeding contained no lead, unless what might have been taken to it through the manure, and had any been taken in that way it would have been buried in the soil beyond the reach of the animals.

In the second case the land was of the same description; in short, no lead in the native state abounds in the country. The cows were watered from a pump in the farmyard; but even allowing, for the sake of argument, that the water had been supplied to these animals through lead pipes, then would it not have had poisonous effects unless it had been almost entirely devoid of organic salts, which I am quite satisfied was not the case. But granting all these proofs to be unsatisfactory, then why should the symptoms detailed by me only appear in the summer months? If caused by lead-poisoning, then we (now using the first person plural) would naturally expect to find them during the whole year, and we might also expect the mortality would be confined to one or more poisonous localities, whereas the symptoms I detailed are almost universally to be found where the cattle are fed on young rye grass, and appears to be more prevalent in very dry weather, and most aggravated under the influence of a strong sun.

Mr. Storrer very distinctly states that the symptoms I detailed were those of lead-poisoning. I beg to differ from him in that respect, but that difference of opinion would seem to

be worthless unless founded upon twelve or fourteen years' experience and, I would say, even then, useless literature, unless showing some proofs that it arose from a proper foundation.

That a few of the symptoms of grass-staggers and lead-poisoning are nearly alike I readily admit, but a part is not sufficient when a whole is wanting. The symptoms of grass-staggers I gave as well as I could (under the disadvantage of not having fourteen years' experience) in a former number, and I shall now endeavour to state some of the best-marked symptoms of lead-poisoning, which, if I mistake not, did not occur in the symptoms I detailed, nor in those I find among the symptoms generally described as those of lead-poisoning. We always have colic, abdominal pains, accompanied with a quick, throbbing pulse; in fact, all the symptoms of abdominal irritation; the gums are of a blue or black colour, which appears to be always best developed after death; and fits along with partial paralysis exist. True fits are present in grass-staggers, but they are fits of grinding the teeth, which has not been universally noticed in lead-poisoning. But let us also consider the post-mortem appearances of lead-poisoning, and see how they correspond with those I detail.

Lead, in all its soluble compounds, is an irritant poison, and we may expect to find in animals dying from its effects the whole of the intestinal canal, especially the large intestines, more or less inflamed, and in some instances almost in a state of gangrene; the lungs and trachea inflamed, and the former gorged with black blood; none of which appearances did I detail in the cases I described. I certainly mentioned that the jejunum presented a slight blush of inflammation on about two inches of its surface, but it was so slight that it might have been caused by some of the indigested food passing into the intestines and there acting as a source of irritation.

Apologising for having drawn so largely on your valuable time and space, allow me, in conclusion, to refer Mr. Storrer to a communication by Mr. Strangways, in the *Veterinarian* for April last, and request him to consider carefully the symptoms recorded there, and see whether they correspond with those of lead-poisoning, or those I described in the *Veterinarian* for August. As for the reference to "vade mecums, treatises, and veterinary reviews," I will leave the reply to those for whom the remarks were intended, at the same time expressing my hope that they will not pass unobserved.

Yours &c.

To the Editors of the 'Veterinarian.'

Facts and Observations.

A NEW ANÆSTHETIC.

Under the name of "kerosolene" a new anæsthetic has lately been undergoing investigation in America. The supposed discovery of its properties was made by its affecting a workman, who was employed to clean out a cistern of some works, in which the substance was the product of the operations carried on. The agent was thereon introduced to the Boston Medical Society; and Dr. Bigelow, in a letter to the *Boston Medical Journal*, reports his experience of it. He describes it as a tasteless fluid, volatile and inflammable, of a faint chloroform-odour, changing to that of coal-tar, and then disappearing altogether. Dr. Bigelow experimented on himself. The kerosolene, he says, was pleasant to inhale, and left no disagreeable after symptoms. In three patients, however, to whom he administered it, a feeble and intermitting pulse was produced, with symptoms of asphyxia, and more muscular rigidity than usual in favorable anæsthesia. The properties of the fluid are, we believe, undergoing further examination; and we shall probably hear in due time whether it is capable of taking the place of chloroform or ether.

ON DIGITALINE.

M. Homolle, whose name, with that of M. Quevenne, is intimately connected with digitaline, has presented a paper to the Medical Society of the Paris Hospitals, wherein he gives an account of very interesting experiments on the value of the alkaloid just named. He wished to ascertain whether digitalis contained another principle besides digitaline which might possess the same properties. To arrive at a satisfactory solution, the author first prepared, with alcohol at 18°, an extract which differed from simple digitalis by the mere absence of chlorophyll. This extract (forty-five grains of which answer to about three drachms of powdered digitalis) was afterwards treated by alcohol at 40°, then by ether, and lastly by chloroform. Thus products were obtained classed respectively under Nos. 1, 2, 3, and 4. No. 1 is an extractive mass deprived of the greater portion of the bitter principle;

No. 2 the acrid, nauseous matter separated by ether; No 3 the bitter principle highly concentrated; and No. 4 almost pure digitaline. M. Homolle experimented upon himself, and such violent vomiting and fearful head symptoms were produced by No 2, that the author well nigh paid his devotion to science with his life. No. 4 (digitaline) was proved to possess alone the power of lowering the pulse and increasing the quantity of urine. M. Léger, Physician to the Bicêtre Hospital, who wrote an elaborate report on these experiments, tried some of the products (except No. 2, which had proved so severe) upon hospital patients, and verified the conclusions arrived at by M. Homolle, who certainly deserves every praise for his fearless and persevering efforts in the pursuit of pharmaceutical investigations.—*Lancet.*

CATTLE DISEASE IN IRELAND.

We learn from the *Cork Constitution* that the disease of young cattle, commonly known as "Blackquarter," prevails to an alarming extent in Kerry. A farmer residing in the neighbourhood of Killarney is said to have lost nineteen very valuable animals in the course of a few days. Others are sustaining similar losses.

ON THE COMPARATIVE INCREASE OF THE TWO EXTREMITIES OF THE LONG BONES.

As the result of experiments upon animals, M. Ollier comes to the conclusion that the humerus increases more by its upper than by its lower extremity, while the radius and ulna increase most by their lower extremities. In the lower limbs the relations are the reverse of this, for the lower extremity of the femur increases more than the upper, the reverse of this being the case with the tibia. These results are of some consequence as regards resection and amputation in young subjects. Thus resection of the articular extremities at the elbow does not induce a very considerable arrest of development, since it is at their opposite extremity that the bones which constitute the joint chiefly increase. In the knee such arrest is much more to be feared, as it is at the ends forming the articulation that the tibia and femur most increase. For the same reason, and the proportion taken into account, excision of the shoulder exposes to more shortening than that of the hip, and excision of the wrist more than that of the ankle.—*Comptes Rendus*, vol. lii, No. 4.

THE VETERINARIAN, NOVEMBER 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —CICERO.

THE OPENING OF THE METROPOLITAN MEDICAL SCHOOLS AND THE SESSION AT THE ROYAL VETERINARY COLLEGE.

THE scientific bond that unites the two divisions of medicine—human and veterinary—is rightly regarded as being as strong and as difficult to sever as the link that binds Prometheus to the rock. That which affects the interests of one affects also to some extent the interests of the other. Both sciences may be said to be identical in their object, and their importance to differ only in degree. Both alike labour for the amelioration of suffering; but man is complex in his nature, and far above any mere estimate of a money value which can be put upon him; this, however, is not the case with the lower animals, and hence the sister science will ever hold the supremacy. Looking merely to the animal part of man, however, it may be correctly said that it is governed by the same physical laws, and subject to the same external influences as that of animals; hence it follows that similar means must be resorted to for the inculcation of the principles of the science of healing in both instances. That which conduces to the desired end in one must necessarily be attended with the like results in the other.

For these reasons we perused with much gratification the introductory addresses delivered at the opening of the different medical schools, and were pleased with the healthiness of tone which pervaded them, as well as with the sound advice given by the respective teachers to the students, and on the necessity, among other things, of even æsthetic culture. One thing we remark, namely, that after some of the lectures a *conversazioné* was held, which brings to our remembrance similar *réunions* that used to take place among ourselves. They were meetings of profit as well as pleasure, and we would ask if they could not be advan-

tageously resumed? As a profession, we are too much estranged from each other. Union is power.

Having lighted on the following review in the pages of a contemporary, we hesitate not to transfer it to our own, since it well expresses our sentiments on the subject.

It has been loudly asserted in many quarters that an earnest pursuit of science lends to infidelity, as if the truths of science and of Christianity stood in positive antagonism to each other. The assumption that science is opposed to religion has caused uneasiness among persons insufficiently awake to the habit of loose generalisation and rash assertion which prevails among the advocates of rationalism. It is therefore gratifying to notice that the inaugural addresses delivered at the different schools of medicine during the past week have been generally marked by a religious spirit and a reverential regard for divine truth. Considering the occasion on which they were delivered, instead of wondering that these references should not have been more precise and detailed, we feel no ordinary thankfulness that they are so full and satisfactory as they are. In this point of view the following quotations will be read with lively interest.

The inaugural address at the Middlesex Hospital was delivered by Dr. Murchison, who pressed strongly upon his hearers their responsibility before God. He said that they must never forget that they came there to acquire knowledge, the attainment of which was the most ennobling of all occupations. It was the possession of knowledge which constituted the real distinction of one man above his fellow, and which elevated the human race above the beasts that perish, while the prosecution of knowledge in a right direction was the best use that they could make of the talents which had been entrusted to them, for by those they hoped to glorify the Creator and ameliorate the condition of their fellow-men. He made, in the course of his address, some admirable remarks on the duty of recognising no distinction between rich and poor, and submitted that a person with an inferior education was not qualified to enter upon the study of medicine, and that it ought to make no difference in the standard of medical education whether a man be destined to practise among the poor or among the rich. It was the body of man, the image of the Creator, which was equally concerned in both cases. No difference was made in the standard of education required of a clergyman according to the class of the community to which he ministered, and no such difference could exist in the profession of medicine. He concluded with the following memorable sentences:—Lastly, it was his advice that they should do their duty in that state of life which they had chosen. To this aim, distinction, wealth, and all other considerations must succumb. They must bear in mind that their calling was a sacred one. It would be their blessed privilege to emulate the example of the Great Physician, and to go about the world continually doing good. Not a day would pass but they would have it in their power to alleviate suffering, to heal the sick, and to minister comfort and consolation to the dying. But they must be careful not to incur the charge of abusing these privileges. Let not familiarity with disease and death and the frail emblems of mortality render them callous to the effects which they naturally produce upon the mind. When they were called upon to witness the flickering and extinction of the flame of life, let them remember that ere long they themselves would be the principal actors in such a scene, and that then they would have to account for the privileges and talents entrusted to them on earth. Let them think what that account must be if they made the sacred privileges of their calling

and the sufferings of humanity entirely subservient to the attainment of wealth and worldly distinction. Above all, "seek ye first the kingdom of God and His righteousness," and, be assured, "all these things shall be added unto you." Dr. Murchison was loudly cheered at the close of his address. A *conversazione* afterwards took place.

Dr. Henley, at University College, discussed the progress of medical science:—There were many things in nature which they could not explain—there were many things in medicine which they did not comprehend—but he had no sympathy with those who preferred to impose upon the reason visionary agents, rather than feel that Nature's works were too great for them to understand. However much they had yet to learn, he believed that the intellect of man would yet solve the problem of organization, and that the practice of medicine would, ere long, rival any of the exact sciences of our times. Let them look for a moment at what recent physiology had done. Had it not given them a clearer, he might say a simpler, idea of what life was than they previously possessed? Had it not shown them, for example, that their limbs moved in obedience to mechanics, that the crystalline lens acted according to the law of optics, that their heart's action was within the comprehension of hydraulics, and that respiration, digestion, and absorption were performed on purely chemical and physical principles? In a word, recent physiology had pointed out to them that the phenomena of life were the effects of a combination of the natural laws which governed the universe at large. It had shown them that every organism in the possession of life, no matter whether it were at the bottom of the vegetable or at the top of the animal scale, was undergoing never-ceasing change, and that, notwithstanding the apparent stability of its frame, every particle comprising it was transient in the truest sense of the word. The appearance of identity which the living organism presented was an illusion; for every day, every hour, every moment, its parts were wearing away. No movement could be made, no function performed, without a destruction of matter. Every breath he drew, every word he uttered, every thought, was accompanied by a metamorphosis of material. Well might they exclaim, "How wonderfully, how fearfully are we made!" Life was one perpetual state of death, and if to live was to die, so to die was to live, not only in a spiritual but in a physical sense. . . . The physicians of to-day were neither conceited theorists nor proud empiricists, but humble seekers after truth, and ill did they merit the ignominious title of unbelievers which ignorance occasionally hurled at them. Were they irreligious because they read the book of nature, and believed in astronomy, which told them that the sun did not move; geography, that the earth was not four-cornered; geology, that the world was not created in six days? Surely not! Was a machine less perfect because they understood its construction? Was man less the work of his Creator because they comprehended his organization? On the contrary, far from destroying their feelings of veneration, a knowledge of nature's laws but rendered them more acute, by unfolding to them the immeasurable distance that separated the feeble works of man from the mighty works of God. He concluded his address with some admirable advice to the students, pointing out to them the necessity of nurturing a spirit of religion, and that their success in after life would depend as much upon their moral as upon their mental qualifications. (Loud cheers.)

Professor Bentley summed up a practical address at King's College by recommending the students to be regular in their attendance in the College chapel, remembering that the motto of their college was "Sancte et Sapiente." They had a noble calling, and it was their bounden duty to ask God's blessing on their undertaking, so that they might receive reward in the world and unspeakable joy hereafter, when time itself should be no more.

At St. Thomas's Hospital, Dr. Bernays expatiated on the dignity and responsibility of medical science:—If they asked him what was committed to the care of a physician, he answered the life, the sacred life of man—life of such importance that our Maker had said, "He who sheds man's blood, by man shall his blood be shed." Surely no mean thing this! Nay, rather was there any greater calling? The medical practitioner should be a gentleman, if not by birth, by feeling and education; able with discretion and delicacy to administer, not to the body alone, but to many a mind diseased and afflicted. He should know how to possess his own soul in order to be duly enlightened as to the responsibility which he incurs in undertaking the care of another's life. And he must have knowledge. Without intelligence, knowledge, and industry, how could a man practise the medical profession? The soul was not made to be a mere receiver of knowledge. No man had ever fallen in the pursuit after the likeness of God; but mere knowledge, without God, had slain its thousands. God's power and majesty might be seen in nature—His mercy and will in the volume of inspiration. A knowledge of the former was very valuable, but a knowledge of the latter was indispensable. Was it difficult to attain? Thank God, no! It was all written within the compass of a small volume; all that they needed was a teachable spirit. And in the multiplicity of a student's work, how thankful he should be for the Sunday! Let them not employ it for secular purposes; and if any portion of it were devoted to recreation, let it be that which their conscience approved.

Dr. Webb, at the Grosvenor Place School of Medicine, explicitly avowed in his eloquent address the authority of an inspired revelation. "Truth, the great prize with which knowledge rewarded her votaries, the attainment and possession of which was the high guerdon after which man in all ages and in all countries had ever been toiling, was to be obtained. She was within the grasp of all. But this noble quarry was not the reward of the airy flight of imagination. Speculation discovered her not; reason, pure and unassisted, lost herself in inextricable mazes in her search. Yet she was around us all and in us all. Her great Author, who had implanted in man the insatiable desire to possess her, had given him two revelations wherein she was to be found—one from above, which told of man's relations to himself; the other in the glorious universe around us, and of which we physically form a part—the reflection of the intellect of the Supreme, the everlasting tablets on which are inscribed the thoughts of the Divinity. It was with the latter revelation that they in that place had to do. By its investigation truth would be their own."

Dr. Odling, at Guy's, made some apposite remarks on natural laws, the whole tone of which was thoroughly healthy. "The laws of nature existed less in nature than in the human mind. They were not God's full expressions, but man's imperfect conclusions. All observational laws, of the lowest degree of generality, whether physical, chemical, or vital, were or had been inexact. As they became more abstract they became more perfect; but it was only when the laws of the highest degree of generality were arrived at that all variation and exception disappeared." He commended an honest love of truth. "All men loved truth in the abstract, but few loved that particular truth which was subversive of their own opinions. It required an education or mental discipline to overcome the propensity that exists in all men to disregard the results which oppose and to exact the results which support their own theories." In conclusion, he warned his hearers against that barren scepticism which resulted in indifference, and advocated that fertile scepticism which resulted in exertion. He assured them that the science of medicine was a reality based on the interpretation of nature, and that its phenomena were amenable to general laws, and that its problems invited their investigation. He maintained that the study and practice of medi-

cine constituted one of the most dignified and worthy pursuits to which they could devote themselves; that they were to be throughout their lives students of God's works and benefactors of His noblest creatures. (Loud cheers.)

We will not venture to add to the force of the foregoing remarks by any observations of our own, but proceed to speak of that which is more immediately identified with the science of Veterinary Medicine.

In our last we announced that the opening of the scholastic session of the Royal Veterinary College would take place on October 7th, and we have now to speak of it as a *fait accompli*. It was exceedingly gratifying to witness so numerous an attendance, and to recognise among the audience the familiar faces of many of the *élite* of the profession, both from town and country. Among those present were the President of the Royal College of Veterinary Surgeons, the Honorary Secretary and Treasurer, the late Secretary, many members of the Council, the Veterinary Surgeon-General of the Army, several army veterinary surgeons, and also many distinguished practitioners. More especially was this numerous gathering gratifying, as, for the *first* time, the delivery of the introductory address was undertaken by Assistant-Professor Varnell; for, apart from the support thus afforded by the profession to the teachers as a body, we can understand something of the pleasure which Mr. Varnell felt in finding that many had travelled long distances purposely to do him honour by their presence.

The address was listened to throughout with marked attention, its delivery being only interrupted now and then by the applause of the audience. Through the kindness of Mr. Varnell we are enabled to give it *in extenso* in our present number, and thus our readers will be afforded the opportunity of judging of its merits for themselves, and of analysing the statements put forth by its author. As was to have been expected, coming from a new source, it contains much which is novel, a fact which of itself is sufficient to exemplify the propriety of not restricting the preparation of the annual introductory address to one or two of the teachers, as their thoughts will almost of necessity run in the same channel. Throughout it breathes a spirit of goodwill and

sound advice to the pupil and humanity in the practice of the profession; and while it boldly alludes to the vices which attach to some among us, it does so in the most kind and friendly manner.

It is not difficult to see that the author considers that the dignity of the profession, and the estimate put upon its value by the public, will depend greatly upon the means which are at the disposal of the pupil to acquire knowledge, but that changes are not to be effected by hasty generalisations and immature conclusions. We agree that liberalism must have conservatism as her twin sister in attempting reforms in time-honoured institutions. A want of this has often brought ruin instead of success.

We conclude these remarks by expressing a hope that the good advice given to the pupils will be treasured up by them, and become the rule of their conduct. Each is the founder of his own fortune; and the place he will hereafter occupy in society, and the estimate which will be put upon his professional acquirements by a generous public, will entirely depend upon his strict integrity and honorable deportment.

THE EARLY EMPLOYMENT OF NAILED SHOES TO THE FOOT OF THE HORSE.

Through the kindness of Mr. Harpley, Veterinary Surgeon to the Royal Horse Guards, we are enabled to reproduce from the *Archæological Journal* a very valuable and instructive paper on the subject of the early attachment of the shoe by nails to the foot of the horse. The evidences of this having been effected at a much earlier date than is generally considered appear to be clearly established. Nor should we be surprised at this, as doubtless those who first put into requisition the powers of this noble animal for the purposes of war, the chase, or ordinary labour, must have noticed that his unprotected feet could often have their horny covering either broken in *particular* parts or injured by punctures from sharp stones and similar agents, without disabling him from the performance of work. The separation of the hoofs from a dead horse would again afford them

evidence of the form and substance of the insensible horn; while continuous labour exacted from the animal would show the necessity of some temporary protection, removeable, perhaps, at will, to prevent his becoming incapacitated by the too rapid wearing away of the horny covering of his feet. Of the antiquity of the latter-named defence there is ample proof in the paper in question; and although we agree with the late Professor Coleman, that he who first nailed a piece of iron to the foot of the horse was indeed a bold man, still we believe that it was done in very early times, and soon after men had become familiar with the facts to which we have alluded.

We hope to hear that Mr. H. Syer Cuming has continued his researches and been able to fix with tolerable accuracy the date of the nailing on of shoes, and we trust that we shall be enabled to give these conclusions in an early number of our Journal.

Extracts from British and Foreign Journals.

FACTS AND FALLACIES CONNECTED WITH THE RESEARCH FOR ARSENIC AND ANTIMONY; WITH SUGGESTIONS FOR A METHOD OF SEPARATING THESE POISONS FROM ORGANIC MATTER.

By Alfred S. Taylor, M.D., F.R.S.

(*Continued from p.* 548.)

5. *River water, containing arsenic.*—This was probably as severe a test as could be selected for the process. Two samples of water, one of two gallons and the other of one gallon, taken, at an interval of six months, from a pipe supplying an inn in a country town, were respectively evaporated to dryness. Each left a dirty, ochreous-looking deposit, weighing in the larger sample twenty grains, and in the smaller sample thirteen grains. The acid distillates of these residues were successfully placed in the small tube-apparatus for generating hydrogen, described at p. 543; and a capillary tube was connected by a cork* with the chloride-of-calcium tube. Some lead paper was also introduced into the mouth of this tube,

* I have found in these researches that when vulcanized rubber is made the medium of connexion for the glass tubes, some sulphur is invariably carried over.

in order to stop the sulphur. The issuing gas, in each case, blackened paper wetted with the nitrate of silver. It had no effect on lead paper. A full red heat was applied to the tube just before the spot at which it was drawn out. A well-marked deposit of metallic arsenic was obtained in the cool and contracted part of the glass tube. This was estimated by comparative experiments at about 1-250th part of a grain in a gallon of each water. The quantity was so small that no other test could be resorted to, excepting the process of Reinsch, which gave a clear arsenical deposit on a small piece of polished copper. The metallic deposit in the capillary tube had the appearance and entire volatility of arsenic.

The amount of arsenic here found represented about one grain in two hundred and fifty gallons of water.*

6. *Sediment of a river.*—Two ounces of a sandy sediment, collected from the bed of a small stream in Derbyshire—above any position from which arsenic could find its way into it from any artificial source—were mixed with hydrochloric acid and distilled. The acid distillate was perfectly clear and colourless. It yielded a well-marked quantity of metallic arsenic, when tested in the tube-apparatus, as also by Reinsch's process. In another sample, procured from the same spot, which had been distilled by Mr. Dugald Campbell, arsenic was also found, with traces apparently of antimony.

7. *Thames water.*—Considering the above results as rather remarkable, and to a certain extent confirmatory of the opinion that arsenic is pretty widely distributed through soils

* Samples of water taken at or about the same dates, from the same pipe, were examined by Dr. Miller and Dr. Lyon Playfair. The result was, that these gentlemen, acting independently, and employing entirely different methods of research, also found arsenic in this water. In their opinion, the arsenic proceeded from the refuse of certain chemical works on the stream; but as the dried mud of the stream yielded only four tenths of a grain to a pound, and arsenic was found in the mud of the stream above all chemical works, it was, in the opinion of Mr. Campbell and myself, an impurity which might be explained by reference to natural causes. The Wiesbaden water contains a larger proportion of arsenic per gallon; and there are no chemical works to account for its presence there.

In the 'Chemical News' for August 25th, 1860, p. 127, Mr. Church has published the results of some experiments on the water of the river Whitbeck, in Cumberland. The water was alkaline, and when analysed yielded distinct indications of the presence of arsenic. The arsenic existed as arsenite—not as a mere trace, but in determinable quantity. In some seasons of the year the proportion approaches a good fraction of a grain of arsenic (metallic) in a gallon of water. The locality from which the stream takes its origin is rich in minerals. Mr. Church found there arsenical cobalt, and from this the arsenic is probably derived. The arsenical water is habitually used for every purpose by the inhabitants of the village of Whitbeck, and with beneficial rather than injurious results. This appears to show clearly that river water may be arsenical wholly independently of chemical works on the banks.

in which pyrites or ochreous compounds are found, I examined the dry residue of a gallon of Thames water by the distillation process, and found therein, besides sulphur, a trace of a substance resembling metallic arsenic. It would require, probably, the residue of several gallons to determine the question distinctly.

7. *Mud or sediment from the Thames.*—Some of this mud was collected at low water, on the west side of London Bridge. It was taken partly from the surface, and from a few inches in depth. Two ounces of the mud in a dry state, the water (forming 34 per cent.) having been expelled in a water-bath, were distilled with two ounces of pure hydrochloric acid. One ounce of a clear and colourless acid liquid was obtained in the receiver. It was placed in the tube-apparatus with zinc, and the gas being previously dried, and deprived of any sulphur, was passed into a solution of nitrate of silver. After a short time there was a dark metallic deposit of the usual black precipitate, indicative of the presence of arsenic; and on applying heat to the current, a deposit of metallic arsenic was procured, which was estimated at not less than the 1-2000th of a grain. I am informed that, during the last summer, no chemical liquids have been introduced into the river for the purpose of deodorizing it; hence, the presence of arsenic in the mud cannot be ascribed to the poisoning of the water by the use of arsenical chloride of iron. The arsenic must be derived either from factories on the banks of the river, or from the arsenic naturally diffused through soils containing oxide of iron.

In these instances, it may be remarked, the arsenic was in an insoluble form.*

(*To be continued.*)

* It is now well-known that a large number of mineral waters in France and Germany contain arsenic. In the 'Annuaire de Chimie' for 1849, p. 277, there is a list of forty mineral waters, including six of the well-known Vichy waters, which contain arsenic. Those of the Upper and Lower Rhine also contain this substance. (See 'Annuaire,' 1848, pp. 189 to 194.) The waters of the Baths of Alexis, on the Hartz, evidently derived the arsenic from arsenical pyrites in the soil. According to Dr. Hoffmann, the Wiesbaden water, which is generally considered a wholesome water, contains one grain of white arsenic in a hundred and sixty-six gallons. ('Chemical News,' August 11th, 1860, p. 101.) This is a larger proportion than that found in the water supplied to a country town above referred to (p. 53). The mud or ochreous sediment of these waters also contains it. ('Annuaire de Chimie,' 1848, pp. 189—194.) It is probable if the sediment of most of our rivers was examined, arsenic would be frequently found therein as a natural constituent. This method of analysis will be found convenient for detecting arsenic in waters. An acid salt of iron is always produced during the distillation, but, with ordinary care, this does not pass over with chloride of arsenic so as to affect the subsequent steps of the process.

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Journal des Vétérinaires du Midi, July, 1861.

PITYRIASIS IN THE HORSE, &c.

By MM. Marly and Caussé, Vétérinaires du 11me Chasseurs.

For some time past diseases of the skin have been the subject of long, laborious, and minute investigations by the medical profession. Those labours have served to guide the observer and the practitioner in the adoption of a rational therapeutic treatment, but undoubtedly all has not been done; there remains still a great many morbid states to be unveiled which, with the assistance of micrography, may be brought within our knowledge. In veterinary medicine, proceeding by analogy, endeavours have been made to bring these observations to bear on the maladies of the cutaneous system of the animals, but the greatest confusion as yet prevails on this point. Thus, to quote only one example in Hurtrel d'Arboral and the authors who have preceded him, we find at the word *dartres* a definition very little in harmony with what we now understand by herpes, which Willan has classed among the vesicular diseases, and Alibert among the dermato-eczematose. It is easy to perceive that under this name are comprised several different affections, the denominations of which belong to time long passed. The affections which the authors observed on some of the horses of the remounts which were purchased in the north and the south of France, and which were mostly of a dark colour, and from four to five years old, were thus distinguished. They presented on the surface of the body several spots denuded of hair, principally about the head, the top of the withers, the flanks, and the inside of the thighs, &c. When the patients were brought to the infirmary the malady had a well-defined character, the affected parts were of various sizes and shape, the depilation in the majority of them was almost complete, in others a few hairs remained. The scales were whitish, and were easily detached from the skin; there was a slight pruritus; this symptom was, however, not constant, and in the majority of cases was so little marked that it might have

passed unobserved. There was no alteration in the general state of health, and the horses fed well. The march of this eruption was variable, and the progress was from the centre outwards, sometimes to the extent of from 6, 8, to 10 centimètres. In other cases the hair became gradually thinner, and the scales appeared; they at first resembled meal, then they became more like bran, of various thickness; after the application of the treatment they diminished in size, and new hairs began to appear, at first short and shiny, but as they grew the spots resumed their primitive colour. The duration of this malady was from fifteen to thirty days, and always terminated favorably.

Pathology.—On examining the skin with a strong lens the authors discovered neither pustule nor vesicle on the surface of the skin, neither was there thickening of it; there was a complete absence of acari or other parasitical animalcula; the only thing observed were scales of a whitish colour, which seemed to arise from the epidermis, and the loss of hair. The authors think that it was an affection of the bulbs of the hair, the loss of which occurred during the malady, and that there must have been some alteration in the epidermis also, as this came off in greater quantity than in the normal state; it may also be presumed that the sudorific glands participated in the disease; the affected parts always seemed more arid than the other parts of the skin. The treatment consisted in frictions on the affected parts with mercurial ointment, which was washed off every other day; afterwards oleine lotions were applied until the cure was effected.

A CASE OF VOMITING IN A HORSE WITHOUT RUPTURE OF THE STOMACH, &c.

A MARE, about nine years old, of a sanguineo-nervous temperament and of plethoric constitution, after being watered at a well was suddenly attacked with violent colic. She made strong efforts to vomit, followed by the rejection through the nose of a liquid mixed with particles of food. The mare had eaten her rations with good appetite, and was only perceived to be unwell when she had finished her oats. The symptoms were, great anxiety, groaning, temperature of the body increased, anorexia, mouth hot, tongue red at the point and sides, tympanitis of the flanks, mucous membranes red and injected, pulse hard and full, nostrils distended, respi-

ration laborious, orthopnœa and continued colic. The mare attempted to bite every one that came near her; she struck the ground with her feet, frequently attempted to lie down, but hardly touched the litter before she was up again. The vomitings succeeded each other in from four to five minutes' intervals; and every time she brought up from two to three decilitres of fluid mixed with particles of food. The vomiting increased the difficulty of respiration, the efforts were most violent and were accompanied by a sharp cry, and sometimes with a violent fit of coughing. At 6 o'clock, about an hour after the first attack, there was great prostration, the head was low, the eyes half closed, the sight dim, the mucous membrane purple, the body covered with a cold perspiration; the colic, however, had abated, and the efforts to vomit were less frequent. The escape of the liquid from the nostrils was continual, but in small quantity, the respiration short and quick, noisy and laborious, the beating of the heart violent, the respiratory murmur was diminished in some parts and increased in others. The diagnosis was acute gastritis, with a ruptured stomach or diaphragm; the congestion of the lungs led to the latter conclusion. Considering the case hopeless, no treatment was recommended. The rejection of the contents of the stomach continued until 5 p.m. the next day, but with very slight efforts at vomiting; on the next morning she died about 11 o'clock. An hour before death the discharge from the nostrils consisted of dark-coloured blood, this continued until death. The mare now lay down, and died in about twenty minutes. The autopsy was made three hours after death, when the stomach was found to be of the usual size and to contain about four to five litres of liquid, and some solid food; the mucous membrane of the right sac was of a purple-red colour, it was thickened, and there were eight ulcers of the size of a golden five-franc piece each; they were not very deep, but were of an intense red. The mucous membrane, part of the peritoneum, the colon, and the small intestines, presented traces of inflammation. The œsophagus was flabby, and at its insertion in the stomach, and also at that portion which is situated in the mediastinum between the lobes of the lungs, it was distended, and contained a small quantity of food. The diaphragm presented some incomplete transversal rents situated near the tendinous portion; the smallest were from five to six centimètres in length and one in breadth; they penetrated to one half the thickness of the substance of the coat of the organ. Two thirds of the lungs were gorged with blood, the mucus of the trachea was of a dark-purple colour, which was attributed to the blood that had escaped from the

nostrils an hour before death. The right ventricle of the heart contained a black clot of blood, the left was empty. The liver was much congested, and easily separated by the fingers. As to the causes of this case, the author thinks that the well water was the origin of the irritation of the mucous membrane of the stomach, and that the vomiting was consecutive on gastritis, that the congestion of the lungs was determined by the reiterated violent efforts to vomit and the partial rupture of the diaphragm, &c.

Annales de Médecine Vétérinaire, Bruxelles, Aug., 1861.

REPORT ON THE STATE OF HEALTH OF DOMESTIC ANIMALS IN THE PROVINCE OF BRABANT.

The constitution of the atmosphere during the past summer was humid, the fodder thereby naturally contained much water, and was, consequently, rendered less nutritious, but it had not that detrimental effect on the domestic animals which might have been expected.

Bronchitis.—M. Lambeau reports 112 horses to have been attacked with this disease; they were submitted to a hygienic treatment, and all got well. M. Fabry says, "Bronchitis and broncho-pneumonia have been frequent among the horned cattle which were fattening in the meadows." "These affections," he adds, "the causes of which are easily appreciated, and the remedy for which is the abstraction of blood, are recognised by the cough, but more so by the sibilant râle, with or without crepitation." M. Barry reports that he has been consulted on an affection of the respiratory passages, by which fourteen milch cows were attacked in the same shed. The malady simulated pleuro-pneumonia, with which two of his colleagues had confounded it; they had one cow killed, which convinced them of their mistake, as they could not find the hepatization of the lungs which they had prognosticated. M. Barry pronounced it to be bronchitis; he found the following characteristic symptoms:—the coat staring, the skin tight; cough sonorous, dry, and frequent; emission of urine frequent, almost constant, but principally after having taken food or drink; little sensibility on pressure of the sides of the chest or the space behind the withers. On auscultation of the thorax, in front of the sternum and behind the elbow, a strong and dry *bruit de souffle* was heard; in some cases the *bruit de glouglou* was also heard; the

respiratory rhythm was quickened, and the inspiration short and jerked; a mucous discharge from the nose; pulse accelerated; secretion of milk *nil.*

Influenza.—M. Lecouturier mentions it as having prevailed in a farm in the canton of Perwez, where it attacked twelve horses, the first five of which presented the thoracic form of the malady, the others were of the gastric form. In the former the antiphlogistic treatment was followed, but when this was fully applied the convalescence was long, and it was found necessary to have recourse to tonics. The gastric form was announced by fever, which the author combated by bleeding and the administration of stimulants as soon as the circulation had recovered its normal rhythm. "This," M. Lecouturier says, "is empiricism, but it is the means of abbreviating the malady." M. Lecouturier particularly relates a case which terminated fatally, and which is certainly not without interest. The lungs, which were invaded, did not presage a fatal termination; on the sixth day, however, he found a serious complication of the heart, which led him to prognosticate death with certainty. There were tumultuous sounds concentrated about the heart, which he could not well define; pulse small, quick, soft, and almost imperceptible; he diagnosed the presence of fibrine in its cavities. Two horses presented these symptoms, and both died in twenty-four hours. At the autopsy, which was made an hour after death, the left lobe of the lungs was found gorged with blood; the heart voluminous and softened, containing in its cavities, particularly in the left, clots of fibrine very difficult to detach from the valves. These clots were white, with a layer of dark-coloured blood on the outside, and extended into the aorta; there can be no doubt of the formation and pre-existence of these clots before death set in. If the polypi of the ancients were better studied in our time (especially that part relating to their formation), all doubts, whether any existed, would vanish. It is true that during the agonies of death the development of coagula takes place, but the passage from life to death is not the only cause, or even the principal, which ought to be looked for in the great debility of the central organ of the circulation. In addition to the symptoms observed, M. Lecouturier takes care to inform us that an hour after death he found the heart softened. No one would attribute this to a cadaveric effect, no one would believe that a muscular organ affected with mollities contracts with the same force as the one which has undergone no change. On the other hand, the thrombus is no longer a mystery, or where do the embolic coagula in the arteries and veins come

from if they are not preformed and forced there by the action of the heart?

Glanders has nearly remained stationary; of farcy there has been less during this *trimestre*. The greater part of the cases were furnished by the establishments of the post and coaches, and also by barge horses on the canals, in which seventeen cases have occurred. M. Fabry has met with three cases in an establishment of the Messagerie. One of them had enlarged glands and discharge from the nose, the two others had only the glands tumefied.

Pleuro-pneumonia in cattle.—The increase which had been felt in 1859 has diminished; the number of cases have been less than during the last quarter; the number of cured has also increased; those affected with it sent to the butcher are on the increase. This is of good augury, as there is now no longer any doubt that, although pleuro-pneumonia arises from many causes, it is also propagated by contagion, and that the malady and losses would be a great deal less if the farmers would submit their newly acquired stock to a quarantine. It is not only the fair of Malines which is justly suspected of transmitting the disease, but also that of Wavre has a large share in it. A veterinary surgeon of that canton has lately given an account of the malady which broke out on a farm in consequence of a cow which was recently bought at the fair of Wavre.

Inoculation.—M. Devleeschower has experimented on this subject; he has inoculated in three sheds where pleuro-pneumonia had broken out, but he only gives an account of the results of one, reserving the two others for the next *trimestre*. In a shed at Steenhuffel he reports a cow fell sick on the 10th of August, the symptoms were those of the prevailing pleuro-pneumonia; a second case occurred on the 25th, that of a fat beast which was also attacked and sent to the butcher's. From this case he obtained the matter with which he inoculated ten cows in the infected shed and five calves in another. On the 2nd of September one of the inoculated cows was attacked and was slaughtered; on the 11th four of them lost part of their tails, two others had a slight swelling; in three, including the one killed on the 11th, the reaction was *nil;* two of the calves had a slight tumefaction. It is the first time, the author says, that he has had to combat serious consequences after inoculation. A gangrenous tumour in two cases extended to the sexual organs, the udder, and the loins, and it was only with great difficulty the lives of the animals were preserved. The disease has disappeared from this shed, sparing all that were inoculated, whether or not reaction had taken place.

Veterinary Jurisprudence.

KINGSTON COUNTY COURT.—September 24th.

(*Before* J. F. Fraser, Esq., Judge.)

INJURY TO A MARE AT A LIVERY STABLE.

LAXTON *v.* PAXTON.

Claim, £10, for injury done to a mare and damage sustained therefrom. —Mr. Haynes appeared for the defendant, and Mr. Pratt, from the office of Batt and Son, solicitors, attended for the plaintiff.

The plaintiff said, that he put his mare up at defendant's stable on the 13th of July last, the day of the volunteer review; and he engaged with the ostler to put her in a stall by herself, as he wished to feed her. When he went for his mare he found her placed in a coach-house, and when brought out she was injured in the off fore leg, and he was not able to drive her away, and the defendant sent him and his family home in a brougham. The mare was put under the care of Mr. Cheeseman, who charged £3 14*s.* 6*d.* for his attendance, and in consequence of the injuries the animal had sustained, he had been deprived of its services. His whip had also been lost, and he considered that, altogether, the amount of loss he had experienced was £10.

Cross-examined.—Did not say the mare was nervous. It was not a very fast mare. It had not shied with him. It had a scar on its leg, which was quite perceptible, and would determine its value. Told the defendant he should expect compensation; asked him for £10, but said that he would be satisfied with the surgeon's bill, the loss of the whip, and 25*s.* for the expense he had been put to for having conveyances for his use.

Mr. Cheeseman, veterinary surgeon, was called to prove the injury done to the mare, and that his claim was £3 14*s.* 6*d.*, for medical treatment and keep. The injury was very slight, and would not injure the value of the animal if it was about to be sold.

Mr. Haynes addressed the Court, and said that the mare had not been injured by a kick from a horse, but that it had been alarmed by the noise of one of the bands playing, and it ran back and pulled down a part of the manger, and the damage to the animal arose from that fact; and it was a circumstance strongly in the defendant's favour that he had done all he could to have the mare properly attended to, and he did not consider himself liable for anything more, and called *Robert Moss*, defendant's ostler, who stated he remembered plaintiff's mare being put up at his employer's stable on the 13th of July; he fed and groomed it, and put it in the stable with a proper head-collar on, with two ropes from the head through two rings to the manger. There were swinging bales between each horse, but not a separate stall. It would be impossible for a horse to kick over the bale, as they were more than four feet from the ground. The mare was very fidgetty in the stable, and excited from the noise occasioned by the band, which caused it to run back, and it pulled off the top of the manger; called his master, who took away the mare and placed it in the coach-house for safety. It was in a very nervous state. It was not touched by another horse. He saw,

upon examining the animal, that it had received a scratch on the off fore leg, near the chest, to the best of his recollection.

Mr. Laxton said, that the mare was a young one and very nervous. This was said when he came for the mare.

Robert Burbidge, a gentleman's servant, deposed to the manner in which the mare was secured in the stable, and the manner in which it was attended to, and was quite sure that she was not injured by any other horse in the stable.

Cross-examined.—I was present when the plaintiff came for his mare; the bales did not injure her, but it might have been injured by the manger falling.

Mr. David Paxton, the defendant, was called, and said that he was in the yard all day, and when the accident happened by the manger falling. He went in when called, and found that a portion of the manger was between the legs of plaintiff's mare; he took it away, but did not observe that it had been injured at the time, and it was not until he (plaintiff) was about to leave that the discovery was made of the mare being lame, and (defendant) procured a light and found out where the injury was. When plaintiff applied for compensation, he (defendant) made an offer to pay the surgeon's bill and the loss of the whip. Plaintiff said he should then expect to have £6 for the loss he had sustained in consequence of his mare being injured. Upon which he (defendant) said it was an imposition, and would not pay it.

Mr. Batt having replied, *His Honour* said, taking the whole case into consideration, he thought that defendant had done all that was required in the matter; and the evidence adduced by him fully carried it out.

Mr. Batt applied for a nonsuit.—*His Honour* said they could take a nonsuit if they preferred it. This was consented to; and, upon an application made by Mr. Haynes, *His Honour* said he should allow defendant's costs, also for attorney and witnesses.

CHERTSEY COUNTY COURT.—Saturday, September 21st.

(*Before* J. F. Fraser, Esq., Judge.)

SHOOTING A DOG.

PATEMAN *v.* CRAWFORD.

The plaintiff, Mr. Pateman, a farmer at Chertsey. The defendant, Bailiff to — Noade, Esq., a gentleman of fortune, also residing at Chertsey. Mr. Ambrose Haynes, of Wandsworth, solicitor, appeared for the plaintiff, and Mr. Grazebrook for the defendant.

Mr. Haynes, in opening the case to the jury, said his client sought to recover the sum of £8 from the defendant for having on the 5th instant, wantonly and cruelly shot the plaintiff's dog, which, to the plaintiff in his business, was invaluable from its sagacity, instances of which he (Mr. Haynes) would bring before them. Mr. Haynes having commented upon the defendant's wanton conduct in shooting such a dog, called *Mr. Pateman*, who proved that defendant admitted having shot and buried the dog, and said that he had orders to shoot all dogs that were found on his master's premises. The plaintiff said that the dog would mind the sheep in the field all day, would fetch the bull or cows when told, would follow and catch any pig shown to him in a drove, and would act as a messenger to fetch up any one of his men on being told his name. He also related a variety of other acts which displayed an immense amount of intelligence in the brute, and which caused some

merriment in the court. Plaintiff said that he would not have taken fifty pounds for the dog. Three other witnesses were called by Mr. Haynes, in support of the above facts, and to speak to the value of the dog.

Henry Johnson proved that the dog was so sagacious that he would come and fetch witness to replace the hurdles. He had been a shepherd forty-seven years, and never met with such a dog.

Mr. Earnshaw, a farmer, who knew the dog fully, bore witness also to his extraordinary sagacity.

Mr. Grazebrook admitted that his client had shot the dog, which had trespassed on Mr. Noade's premises, and which, it appeared, had been attracted there by a bitch belonging to Mr. Noade, and justified his having done so on an allegation that the dog had attacked his client's wife, and also was in the act of attacking his client, when he shot him in self-defence, which act was justifiable, as his client had every reason to believe that the dog was in a rabid state, and highly dangerous. He (Mr. Grazebrook) would particularly call the attention of the jury to the fact that had been admitted, that the dog was shot in the mouth, which went to show that the dog's mouth was open at the time, and in the act of attacking his client.

Mr. Grazebrook then called the defendant and his wife, who deposed to the dog's separate attacks upon them. Both these witnesses underwent a severe cross-examination by Mr. Haynes, who contended that the plaintiff had made out his claim, and that the defence now set up was an afterthought and inconsistent with the cause assigned by the defendant to the plaintiff when he first spoke to him on the subject, and he put it to the jury whether it was reasonable to suppose that a dog attracted to defendant's premises under the circumstances stated by Mr. Grazebrook would be ferocious and attack persons in the way described, without being first struck or ill-treated.

The learned *Judge* summed up, and told the jury that if the defendant's statement was true, undoubtedly he was justified in shooting the dog, and it would be an answer to the action, but it was a question for them to decide; and if they did not believe the defence set up, then they would find a verdict for the plaintiff, with such damages as they thought fair and reasonable.

The jury consulted a few minutes, and returned a verdict for the plaintiff.—Damages £4.

OBITUARY.

DIED, January 21st, 1861, at Trichinopoly, Madras, Mr. Thos. Smith Parker, M.R.C.V.S. His diploma bears date June 15th, 1842.

ERRATUM IN NO. 402.

At page 366, line 8, *for* John Hanley, *read* John Hanly.

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Communications and Cases.

CARCINOMA IN AN ALDERNEY COW.

By Charles Dickens, M.R.C.V.S., Kimbolton.

In August last my attention was called by the Duke of Manchester's bailiff to an Alderney cow, about seven years old, which had always been much prized as an excellent milker.

History.—About the month of May, last a swelling appeared under the right ear, which gradually increased in size, and was accompanied with a loss of flesh, but not of the secretion of milk. Two or three blisters were applied to the part, and some tonics and iodine exhibited internally, but without any amendment taking place. From the circumstance of her being so much wasted, and no chance existing of her recovery, she was killed on the morning of September 9th.

On making a post-mortem examination, besides the two diseased masses which are sent you, and which were situated under the right ear, one other was found to be attached to the os hyoides, and which had evidently encroached on the pharyngeal space to a considerable extent. Within the thorax, pressing upon and much diminishing the calibre of the aorta, a very large deposit was found, and also another one attached to the right lung. The latter had undergone softening in its interior. There were likewise some small granular bodies situated on the right side of the brain.

All the other parts of the body were free from disease of this kind, but the spleen was found to be white in colour, and not more than four ounces in weight. The ileum contained about a handful of cinders, gravel, and finely broken glass, the existence of which, most probably, was to be referred to a

depraved appetite, which existed towards the latter part of the animal's illness. She was also found to be pregnant with a male fœtus, having gone about three months of her time.

Is it your opinion that Alderneys are more subject to these scrofulous affections than other cattle? I find they cannot bear up against disease in an equal manner to our home-bred animals.

[Our experience of cancerous affections among cattle does not lead to the conclusion that Alderneys are more frequently affected than others. Indeed, we have seen more cases among Devons than among any other variety of cattle. The morbid specimens sent differed in no respect from ordinary carcinomatous deposits, even when microscopically examined.]

HYPERTROPHY AND DILATATION OF THE HEART OF A HORSE, ASSOCIATED WITH A DISEASED STATE OF THE GLANDULAR STRUCTURES.

By H. W. Dyer, M.R.C.V.S., Waterford.

The subject of the following observations, was a well-bred gelding, sixteen years old. About eleven years ago he was sold out of this establishment, and at the time of sale I examined him as to soundness, and did not discover any disease. He was taken to the home of his new owner, and in a day or two afterwards a messenger came to inform me the horse was lame. Without loss of time I called at the stable to ascertain the cause of his lameness, and to remedy the damage, if any existed. The horse was certainly very lame in the near fore foot, the temperature of which was also much increased. I ventured an opinion that the horse must, by some means, unknown probably to the groom, have twisted the leg and foot so as to put some of the internal structures upon the stretch, and thus have caused such sudden and unexpected lameness. The ordinary treatment of hot fomentations, &c., removed the defect in a few days.

After this he was regularly hunted for two or three seasons, and then turned to harness work. From that period up to the time I was sent for to see him, in the month of August last, he had enjoyed perfect health. The man who brought the summons for me on this occasion, said the horse had caught

cold, and was shivering. I fancied it was an ordinary case of what is here termed by unscientific persons "distemper;" viz., common catarrh, and therefore provided myself with suitable medicine—the distance from my infirmary being about four miles. Upon examination of the animal I was of opinion that he was suffering from a slight attack of pneumonia; all the symptoms indicating that such was the case. The owner desired his servant to take the horse quietly into Waterford, and leave him with me, as he had no desire to become a nurse; and from the general character of the symptoms, I did not think there was much risk of injury being done by his removal. Nearly three hours were occupied in his walk to the infirmary. After his arrival I carefully examined him, and found the heart to be at fault. The walk to town had brought out that which before was latent and hidden. The pulse was (as I have generally noticed in these complaints) of that peculiar character which is so difficult to describe in words. It would, so to speak, seem as though treacle, or some such dense liquid, was substituted for the sanguineous fluid. I do not know in what better language to describe the effort of the vessels to circulate the fluid than this. The contractions of the heart never numbered, after the arrival of the horse at my stable, more than from forty to forty-eight beats in a minute. As is my usual practice in such cases, I administered a diffusible stimulant, conjoined with a solution of aloes. This had the effect of causing the pulse to rise a little, as I suppose from its action either on the nervous system or the blood, and to restore to it more of its natural character.

From day to day the horse would cough violently, heave desperately at the flank, and at intervals have a shivering fit, analogous to ague in the human subject. These symptoms were always relieved by the use of

Spt. Am. C., et Spt. Æth. Nit.

As his appetite continued unimpaired, I restricted his food, and gave plenty of fluids, which had also a salutary effect. This state of things continued for some days. The paroxysms attacked him about every other day, and when they came on he would sweat profusely—cold clammy sweats. He would also very frequently look back at his quarters, and appear full of anxiety; indeed, the appearance of the countenance indicated an anxiety akin to that which we see in persons after hearing of the death of some beloved friend or relative. The extremities were often cold, but very variable, never two hours of the same temperature. In short the whole of the frame

bespoke debility or deficiency of arterial action. I informed the owner that it would be useless to keep the horse in the infirmary, as the disease was of such a nature that I could do nothing towards effecting a cure. The treatment at best could merely palliate for a while, and therefore I advised that he should have the horse home, and allow him plenty of grass in a paddock, but away from all other horses, as it was quite uncertain when he might fall down and expire. My advice was only followed in part. The horse was taken home and allowed to roam in a large loose box.

A man upon the farm, who thought I had made a mistake as to the nature of the complaint, begged to be permitted to give a dose of diuretic medicine, as he said the horse wanted only to stale. This was done, and another, and another dose given to the poor sufferer, but they failed to produce that amount of micturition so much desired by the herdsman and his friends.

I would here remark that there is a symptom not named by authors, but often present in most of these cases, as well as in some abdominal diseases, such as acute enteritis, strangulation, intussusception, ruptured stomach or diaphragm, and other allied affections, which pretty generally indicates approaching death. This symptom consists of a relaxation of the muscles of the penis. This organ in death-cases is frequently found hanging down six or eight inches below the abdominal muscles, and it leads many people to imagine that the horse requires to stale, and that the bladder or kidneys are the seat of disease. I have often been annoyed by ignorant persons, in the last stages of an animal's life, suggesting the use of "urine balls," asserting that if the horse could stale he would be soon "all right."

I am induced to throw in these observations for the benefit of some of the younger members of our profession whose opportunities for acquiring practical knowledge have as yet been few.

To return—my patient, or rather now the patient of the herdsman, fell down and died soon after the administration of the last dose of diuretic medicine; very much to the chagrin, be it said, of the party, as he was not prepared for such a crisis. I had expressed a desire to be sent for when this event occurred, as I was anxious to see whether my diagnosis would be verified by the post-mortem examination. Fortunately upon my arrival, I found Dr. Russell, surgeon, who was on a visit at the house, present, and he kindly lent his assistance at the autopsy.

After the removal of the common integument, on opening

the abdomen, I proceeded to search for the stomach—the intestines not bearing any marks of disease. When this viscus was opened, my nasal organ warned me of the presence of something medicinal. I found traces of newspaper and other materials, which led to the belief that some other person had been doctoring. In all probability, however, I should never have known anything of this, had I not been possessed of good olfactory nerves. The owner explained all to me subsequently.

The cuticular coat of the stomach was eroded, presenting a similar condition to that which is found after the inroads of bots. The liver was pale and soft. Both kidneys were soft, and their pelvic cavities contained a large quantity of purulent-like matter. These organs to all appearance had not secreted much urine for some time, as the bladder was empty. Two lymphatic glands, one on either side of the groin, as large as the testicles of a full grown horse, existed, and were full of purulent matter. Portions of the lungs were emphysematous. The heart was the last organ examined. It was nearly double its natural size, and both auricles and ventricles were full of black blood of the consistence of treacle. The right auricle was very much dilated, and the pulmonary artery was so large that I could pass my fist into it. Its coats also were thin. The blood in every part of the body was of the same dark hue and consistence.

Dr. Russell was informed by me, before the examination, of what I anticipated finding; and after the autopsy was concluded, he paid me a high compliment; observing he never had witnessed the heart and blood of the horse in such a state before, and that my view of the case from the very first was highly satisfactory.

In the year 1845 I was fortunate enough to see a few cases of dilatation of the heart, some of which will be found recorded in the *Transactions of the Veterinarian Medical Association* for that year. From that period to the present I have met with a great many such cases, and have invariably found the symptoms as mentioned in this narrative to be present. Treatment will sometimes prove beneficial when the animals have youth on their side.

Blindness is also a symptom often observed in some stages of the complaint. This I have witnessed in horses, and also in ruminants, as well as in canine animals. Another characteristic of heart disease is that of the animal maintaining the standing posture, seldom lying down.

A WORD ABOUT ALOES.

By the Same.

For some years past I have used a solution of aloes made in this form:

℞ Aloës B.B., ℔ij.
Sodæ Carbon., ℔ss.
Aquæ, Oj.

The ingredients are placed in a water-bath, and allowed to remain until the aloes and soda are dissolved.

The aloes being combined with an alkali, I find much more serviceable in cases of dyspepsia than in any other form in which I have prepared the solution.

Many a horse has come to the infirmary with what has been termed colic, and I have administered from four to six ounces of this solution with a little water, and in half an hour the animal has left, and at once resumed his work.

There was a time when it was considered that the greater the number of drugs which were crowded into a prescription the greater the amount of talent possessed by the writer. Now-a-days, however, we hold a very different opinion. The more simple our prescriptions are, the more are they to be depended on.

EVIDENCES OF THE ANTIQUITY OF ATTACHING THE SHOE TO THE FOOT OF THE HORSE BY NAILS.

Dear Sirs,—From the favorable manner in which you have spoken of the paper on horse-shoes, by H. Syer Cuming, Esq., and which I extracted from the *Journal of the Archæological Association,* I venture again to trespass on your space, and to ask you to reprint some additional observations by the same author, which I also take from the society's journal.

The additional notes chiefly confirm by facts the opinion expressed by the author with reference to the undoubted antiquity of nailed horse-shoes, and as such they give increased interest to the subject.

It is to be hoped that in publishing this paper, some of your readers will be induced to give us the benefit of any

facts that may be in their possession, thereby enabling us to investigate more fully this interesting question.

I am, dear Sirs,

Yours very truly,

M. J. HARPLEY, V.S.

Royal Horse Guards.

To the Editors of 'The Veterinarian.'

Extracts from the 'Journal of the Archæological Association.' vol. xiv.

AT a meeting of the society, Mr. H. Syer Cuming read the following additional notes on horse-shoes, as a continuation of his paper on the subject.

"Since the publication of my paper on horse-shoes in our journal, a few facts have come to light which tend to prove in an eminent degree the assertion therein advanced, namely, that the horses of the classic ages were shod in a similar way to those of our own day.

"At the time the paper was produced, we had little to countenance the idea that the early Greeks protected the feet of their steeds with metallic shoes, beyond the bare fact that some ancient horse-shoes of bronze were known to be in existence, and the poetical mention of 'brazen footed horses' in the *Iliad* (xiii, 23, viii, 41). Within these few years, however, Mr. Charles Newton, while vice-consul at Mytilene, found among the fragments of the Parthenon, a horse's hoof with holes all around the inside, clearly indicating where a metallic shoe had been fastened, and it is quite unlikely that any such defence should appear upon a statue if a similar article had not been in actual use at the time.

"Should there still remain some uncertainty about the employment of metallic horse-shoes among the Greeks, the fact of their use by the Romans, has received increased confirmation.*

"There has been found at Stanford-Bury in Bedfordshire, an iron implement evidently made to pick the horses hoofs, and fasten its shoes, together with the remains of the horse and its rider, associated with Roman reliquiæ.† And in August, 1854, there was discovered in Long Smith Street, Gloucester, at the depth of some nine or ten feet from the surface, and mingled with numerous fragments of Roman fictilia, the outer half of a strong iron horse-shoe, with one

* For the discovery of an iron horse-shoe among Roman remains in France, see 'Journal,' vii, 135.

† See 'Gent. Mag.,' Nov., 1848, p. 518.

of the thin headed nails still remaining in the hole.* This interesting relic is now in the possession of Mr. Iliff, of Kensington, by whose permission I here exhibit it. It is exactly like, both in size and fabric, the Roman Solea exhumed in Moorfields, and engraved in our journal (vi, 410); and Mr. Ainslie also places before us a precisely similar shoe, of rather large size, which was met with beneath a Roman road which passes by Inneravon, Linlithgowshire, where the old pavement was removed, and the road first macadamized. It is preserved in the collection of the Society of Antiquaries of Scotland.

"The question regarding the employment of horse-shoes by the Teutonic tribes of Britain has received some slight elucidation. I feel confident that the Anglo-Saxons shod their steeds, and that they called the metal shoe calc-rond, *i. e.*, rim-shoe; though Bosworth says the name signifies a round hoof; and my confidence is supported by the fact of the discovery of some horse-shoes in a Saxon burial place in Berkshire. Mr. T. Wills permits me to lay before you a horse-shoe, which there seems good reason to regard as of Saxon origin; it is about three inches and seven eighths long, exceedingly thin, agreeing in this respect with a horse-shoe found with Saxon remains in Kent (alluded to in my former paper vi, 411), and the iron of which it is composed is of that peculiar ropy kind, so characteristic of the Anglo-Saxon era; it is sharp at the extremities, has no calkins, and the six large square nail-holes are cut clean through the substance, and not counter-sunk to receive the nail-heads, as in the Roman soleæ. This curious specimen was recovered from the northern side of the Thames, about midway between Dowgate and Blackfriars Bridge.

"I would now call attention to a shoe, differing from any we have hitherto considered, namely, an example of the kind known as a half moon. It is contrived to fit the outer half of the left fore hoof of the horse; the intent being to prevent it cutting the opposite leg, which it would have done with the ordinary formed shoe. It is rather thin, has four square counter-sunk nail-holes, or stampings, but neither calkin nor fullering.

"This specimen was exhumed some years since from a considerable depth in Moorfields; it is certainly of an ancient fabric, though its exact age cannot be determined, nor do we indeed know when such shoes came into vogue; that they are as old as the seventeenth century is clear enough, for in

* Some notices of the discoveries in Gloucester will be seen in the 'Journal,' x, 313.

Torrians's 'Italian and English Dictionary,' London, 1688, we find mention of lunette, a kind of horse-shoe, called half-moon shoes.

"In my former paper some allusion was made to the horse-shoe as an heraldic charge, and I have now the pleasure of placing before you two singular Flemish carvings, in wood, of the latter half of the sixteenth century, on one of which the horse-shoe forms a prominent object as an armorial badge. These carvings appear to have formed portions of the frontal decorations of a cabinet or armoire, and represent demi-figures of a lady and gentleman in broad ruffs, surmounting pilasters, on the fronts of which, and upheld by the hand of each figure, is a fanciful shield; that on the male terminus is charged as follows:—*Party per fesse*, a merchant's mark, in chief a flint and fire-iron (or steel as it is now called), with issuing sparks. The shield on the other terminus bears a large horse-shoe with clips, calkins, and six holes, and within a large horse-nail and hammer, bringing to mind the seal of Radulph Marshall, the farrier of Durham, given in the *Archæological Journal* (iv, 149), and also the arms upon the andirons engraved in our Journal (v, 393). It is no easy matter to decide who are intended by these images. The emperor Charles V, and Isabella of Portugal; Philip and Anne of Austria; Albert and Isabella of Flanders; and Philip and Mary of England, have each in turn been suggested, but the carvings bear but slight resemblance to any of these worthies.

"The shields are in all probability those of two rich guilds, and the demi-figures the effigies of their illustrious founders or patrons.

"We have also seen that an iron hoof pick has been discovered among Roman remains in Bedfordshire, and I now exhibit a more modern, yet still an early example of this useful instrument. It consists of a thin hook, broad at the lower part, and tapering to the handle, which is a large bow, like that of some keys of the fifteenth century. The entire length of the instrument is five inches and a quarter. It was dug up in 1839, from a great depth, in the grounds belonging to the old Mansion House at Newington Butts, an erection of the middle of the sixteenth century; the pick is, however, I think, very much older than the house."

FIBRINOUS TUMOUR SITUATED IN THE PELVIC CAVITY OF AN OX.

By E. J. Bovett, M.R.C.V.S., Bridgewater.

I have forwarded, for your inspection, the rectum of a three-year old steer. The history of the case is as follows:

Early on Sunday morning, September 9th, I was called to see a steer, the property of Mr. Thomas Danger, of Huntstile, the messenger informing me that the animal was supposed to have eaten yew, and to be poisoned, as he had got into a wood where there was plenty of this shrub. He was first taken ill on Friday, when a neighbouring cow-leech, passing by, was called in, and gave some medicine, both on that and the following day. The owner also, as the bowels were constipated, gave a pint of castor oil and a pound of salts in two doses in the afternoon and evening of Saturday. On my arrival I found the steer lying down and breathing heavily, and bending himself similar to a cow in parturition. A small quantity of fæces had passed, which were, however, chiefly of a mucous character, containing little egesta. The horns, ears, and mouth were hot, as in ordinary sympathetic fever. I was informed that the animal had urinated freely just before my arrival, or I should have suspected the neck of the bladder to have been the seat of disease. He rose without any difficulty and walked out of his stall in an ordinary manner. He also appeared hungry, as he would crop the grass, and eat it with apparent relish, between the "bendings," which were very frequent.

I introduced my hand into the rectum, when he immediately threw himself down, but soon rose again, and I was enabled to pass my hand in a little further. On doing this, I felt that the rectum was somewhat diminished in size, and there was some blood-stained mucus also in the intestine. At first I fancied that "gut-tie" must be the cause of his suffering, but then there was an absence of nearly all the symptoms described by my friend Vine and others, who have written on that peculiar form of strangulation of the intestines. Abandoning this idea, I administered some more aperient medicine, and injected warm water up the rectum, which I ordered to be frequently repeated, until the bowels should respond. Antispasmodics were also administered.

5 p.m.—The patient has voided a fair quantity of fæces, in

a softened condition, the first time since Friday. The "bending" is slightly relieved. Some sedative medicine was given, and a repetition of injections ordered, with small doses of cathartic agents, as the fæces were not so natural in their consistence as could be wished.

On the following morning I found, on my visit, that the owner had sent the animal to the butcher to be slaughtered, about an hour before I arrived. I hastened there, which was about a mile distant, and found he had been opened and the parts thrown in different directions. I happened, however, to find the rectum cut out as I have sent it to you. The surrounding parts were highly inflamed, and the fat covering the kidneys greatly changed. The omasum was full, but not "bound." The other viscera were healthy, excepting a slight blush of redness which pervaded the intestines throughout.

[The morbid specimen forwarded by Mr. Bovett consisted of a tumour, chiefly composed of fibrine, which in its growth within the pelvic cavity had encircled the rectum, and caused ultimately a considerable mechanical impediment to the passage of the fæces. On dissection, both the coats of the intestine and some portion of the tumour were found to be infiltrated with blood, which had escaped from the adjacent vessels, but which in our opinion had only occurred during the last few days of the animal's life. In no other respect was any interest attached to the specimen.]

THE COMPARATIVE MERITS OF ENGLISH AND GERMAN SHOEING.

By "Quæsitor."

When staying in Paris for a few days, on my return from a continental trip, I happened to take up the *Times*, and read with much surprise the letter of a correspondent on the shoeing of horses in London. After describing the usual method, the writer urgently recommends, as an improvement, the addition of a knob of steel at the toe of the shoe, and calkins at the heels; because such additions would relieve the animal of much labour and suffering, and make it more effective.

All who have given their attention to the subject know

that this system, so far from being new, is very old, and in England is obsolete; simply because it was found, by experience, to be injurious. In Germany, however, and elsewhere, it still prevails, and horses, whether employed in fast or slow work, are at the present time generally shod in the way recommended by the *Times* correspondent. The subject, nevertheless, is engrossing the attention of the authorities, both professional and public, and efforts are being made by them towards assimilating their practice to the English model.

In directing attention to this matter, I think it is better to state a few facts rather than enter upon speculations concerning the theory, at least at the present time.

Some years ago a German nobleman visited England, and made special inquiries upon the subject, the result of which was, his full conviction that the English system of shoeing was the best. By this he understood that, as regards the fore shoe, it should have a perfectly level bearing on the foot, and also on its ground surface; be well "seated out," without calkins or knobs, and pierced with, from five to eight nail-holes. He told me his story thus:

For many years he had been in the habit of buying English horses, which, at the time of purchase, had good action and good feet. After these horses had been at work for some time, in his own country, they lost their action, and their feet became *contracted*, without any apparent cause. So disappointing a circumstance led him to search thoroughly into the whole system of management, but without success. At last the thought occurred to him that the cause might be in the difference of the method of shoeing in England and Germany; and after a careful and thorough study of the theory and practice of the art in both countries, he resolved to attempt the introduction of the English method in his own country, at least so far as his own horses were concerned.

The difficulties were very great. German farriers, and not they only, have their own ideas of shoeing, and hold them very tenaciously. They fancy all innovation an impertinence, and therefore every suggestion awakens almost personal resentment. By dint of perseverance and personal superintendence, however, the difficulties were overcome, and ultimately the horses were shod somewhat as they would have been in England. Not very long afterwards he began to reap the benefit. His horses went better, performed long journeys with less fatigue, their joints were less stiff and swollen, the feet of the new horses did not become con-

tracted, and those of the older began to resume their proper form. Why these results followed it were tedious to particularise, but of the facts I can offer the testimony of personal knowledge.

If the reader can imagine a roughly made shoe, such as is generally found on the hind feet of our London cab-horses, put on to the fore foot of a high-actioned, sound, and good footed horse, he will have an unexaggerated idea of the shoe which the poor brutes in my friend's possession had to travel in, and also of the fore shoes in general use in Germany. The evil results may be anticipated.

My friend found, however, that something was yet wanted to complete his success, and that *something* he determined to obtain without hesitation and irrespective of cost. Selecting one of the most intelligent of his farriers, he brought him to London and placed him in a forge, under the eye of a master who devoted much attention to the subject. The man availed himself of this opportunity with eagerness, and prosecuted his studies with such avidity and success, that on my visit it was evident the expense and trouble were not thrown away. His patron had been liberal in adopting all the accessories which could stimulate and help the worker.

I visited the workshop about a month since, and found a modern, well-built, well-lighted, clean, and well-ventilated building, such as would shame even very many English forges, containing an anvil and tools from Pfeil and Stedall, models of shoes—old and new—designed to show that there was a uniformity in the principle of shoeing light and heavy horses, and last, but not least, a workman who thoroughly understood everything shown him on his English visit, and who had returned with the generous determination not only to practise what he had learned, but to communicate it to others. It was interesting to see the delight he felt in recounting his adventures with his unbelieving countrymen, and how they had been won over to his cause.

The authorities of the Veterinary College of Dresden have entertained the subject, and notwithstanding the several theories thereon with which I do not agree, they have gained much in abolishing calkins to fore shoes.

I noticed also, that in Paris many of the heavy cart-horses are now shod without even calkins to the *hind* shoes. Now, if the fact is borne in mind that the heavy stone and building materials in that capital are principally conveyed in two-wheeled carts, and that the horses have to travel on all descriptions of roadway—Macadam and rough pavement included—it will be seen how little claim the *Times* correspon-

dent has on the attention of practical or scientific men. It appears very strange that an attempt should be made to reintroduce into England a system of shoeing adopted hundred of years ago, and long discarded, whilst all studious persons, both here and on the Continent, are more and more convinced that any device of the kind named is an interference with nature, which she will assuredly resent.

The subject is very important, and has also a great commercial value, for it is not disputed that thousands of horses are prematurely rendered unserviceable through bad shoeing. If we can partially mitigate the evil much will be gained, but let us be very careful before adopting calkins to fore shoes for fast horses in London, or indeed anywhere.

LAMINITIS INDUCED BY EATING WHEAT.

By H. Ching, Student, Coggeshall, Essex.

So few cases are recorded of horses suffering from the effects of eating wheat, that I am induced to record the following, from their having recently come under my notice.

On the evening of the 3rd September, I was requested to attend two colts and two cows, the property of Mr. C. Stebbing, of Pattiswick, which had got into the barn, and eaten from a sack about six pecks of wheat. I accordingly went, and gave to each of the colts, Aloes ʒv, and to each of the cows Mag. Sulph. 1 lb., there being then no indications of ill-health. Upon my visit the next morning, I found both the cows, and one of the colts, doing well. The medicine had not operated upon the other colt, therefore I ordered him out for some gentle exercise. During this time, the animal purged twice, and a few grains of wheat were expelled with the fæces. I left orders should any of the animals appear ill to send for me immediately, but this they neglected to do, consequently, I did not go again until the following afternoon.

5th, 4 p.m.—On entering the stable, I found the colt that had not purged freely on the previous day very unwell, no fæces having passed since yesterday. The visible mucous membranes were highly injected; pulse upwards of 100 and full; breathing greatly accelerated; much frothy saliva flowed from the mouth, and the animal was continually champing. He appeared also to suffer great pain, and was

constantly lifting his limbs. I bled to the amount of four quarts and gave

Aloës, ʒij;
Hyd. Chlor., ʒj.

Enemas were also administered; and the bowels having not responded, two hours afterwards I gave

Oleum Ricini, Oj.

As the colt had not partaken of anything since the attack, I ordered him two quarts of oatmeal gruel, which he drank freely. The enemas were directed to be continued every hour.

6th, 8 a.m.—The breathing and pulse were somewhat reduced, and the bowels had responded freely as the colt was purging. A quantity of wheat was found in the fæces. Laminitis, however, had set in, and, accordingly, I placed the feet in warm poultices, and administered the following medicine:

Liq. Amm. Acet., ʒiij;
Ext. Hyos., ʒss.

A bran mash and oatmeal gruel were ordered to be given.

7th.—Finding that laminitis was still present, I continued the same treatment.

8th.—The colt appeared somewhat better this morning, being able to move about the stable. I gave the same mixture as before, with the addition of Sp. Æther. Nit. ʒj, and still continued poulticing the feet.

9th.—I found my patient improving fast, and therefore did not deem it necessary to give any more medicine, but continued the same treatment to the feet until the 12th, by which time he became perfectly sound, and has continued so.

"GRASS-STAGGERS," OR LEAD-POISONING.

Mr. Storrer in reply to Mr. McIntosh,

Gentlemen,—I beg a corner in the *Veterinarian*, that I may very shortly say a few words in answer to the letter of of Mr. A. T. McIntosh which appears in your last number.

Allow me first of all to remark, that I very much dislike personal squabbles, and never engage in them farther than is absolutely necessary to get for myself, or the cause I have

in hand, a fair hearing. Of Mr. McIntosh I know nothing, except by his name and address as they appear in your columns, and his professional standing I have from the same source. As a *student,* I thought he might be the better for a hint as to where he would obtain further information upon a subject he (in my opinion) was ill informed upon.

Mr. McIntosh says, I made only assertions.—What would he have? I told him the symptoms he described were in my opinion those of "lead-poisoning," and referred him to a valuable treatise in which he would find information upon the subject.

I have now a serious charge to bring against Mr. McIntosh, viz., that he does not truthfully quote my words.

If Mr. McIntosh knows nothing of me except by what is found in my letter of September, he cannot say whether I have had four, fourteen, or forty years' experience. I refer to *literature* of a certain period, and his remarks are not honest with that clause of my letter, for I cannot but consider him capable of understanding it.

Mr. McIntosh asks me in what *person* he ought to have written? Does he really want me to tell him? Might he not have done throughout the whole communication that which he did in the end of it—if he must need write—quote the words of other men? He surely must have had an opinion from Mr. Paterson and Mr. Strangeways, and any other that might come in his way.—Surely a neatly got up essay, culled from, and acknowledged to be the opinions of worthy men, handsomely linked together with the taste and genius of a student might have been less egotistic, and still brought the writer into notice—more especially if like another author, he were an adept at stringing lords, knights, and foreign professors into his list of authorities.

Although Mr. McIntosh does not appear to have paid any attention to my recommendation to read "Cuming." I have looked up his authority—namely Mr. Strangeways, in the *Veterinarian,* of April last. The cases referred to by Mr. Strangeways are very different from those mentioned by Mr. McIntosh. The disease described by the former occurs towards the end of June, July, or August, and is believed to arise from the grass being then dry and indigestible and probably bearing seed. That described by the other occurred in the middle of May, when the grasses are succulent and very digestible. Mr. McIntosh admits that the grass in the rumen was "half shot," the stage above all others when ruminants thrive best upon it. I believe Mr. Strangeways to be right in calling the subject of his paper acute dyspepsia.

Mr. McIntosh goes on to describe the effects of the soluble salts of lead. I may state merely, that the cases once so common in the north—now rarely seen here, since the cause was generally known, but still both common and fatal about Dumfries—are caused sometimes by refuse paint, sometimes by the sheet lead of the grocer, and very frequently by the worn-out pieces of floor-cloth, all which used to be thrown into the dung-pit. These forms are equally fatal, the early symptoms being only slightly different. Such materials are put on the land along with the manure and buried, but for a time only, as the plough and harrow bring them up again to the surface. It may be many years before they are picked up by the cattle when eating the first year's grass, and produce all the fatal symptoms, ridiculously called by Mr. McIntosh "grass-staggers." It would be altogether out of place for me to say another word on this subject, important though it be. It would serve no useful purpose for me to repeat what has already been so well said by "Cuming," but I shall be most happy to add largely to the list of cases illustrative of the disease, if Mr. McIntosh or any other gentleman should require further evidence in the matter.

I am, Gentlemen,

Yours truly.

To the Editors of 'The Veterinarian.'

Facts and Observations.

ETIOLOGY OF DISEASE.

A STATEMENT has lately appeared in the *Journal du Loiret* to the following effect:—A dead dog was lately thrown into a ditch in the parish of Cortral, and there left. The carcass was soon covered with flies, which then spread over the whole place. An epidemic of anthrax was the consequence, and the victims were—one cow, two horses, and forty sheep. A child was also attacked, but by careful and skilful treatment it luckily escaped.—*Medical Times.*

CASE OF HYDROPHOBIA.

An interesting case of this fearful affection came under M. Trousseau's care at the beginning of the year. A man, aged 37, was bit by his dog, which afterwards died mad. The hydrophobia manifested itself a little more than three months after the bite, the patient dying seventy-six hours after the first manifestation of the disease. The usual symptoms were present, and on an attempt being made to convey water into the stomach by the stomach-pump, which was introduced without causing any suffocative paroxysm, the patient became livid, and as if dead. He rallied again, but soon after died. In this case the propensity to venereal excitement, which has sometimes been noted, was remarkable, and (from his wife's statement) unusual; and until the patient's death he exhibited the most frightful erotism and constant ejaculations. M. Trousseau has only witnessed four other cases of this fearful malady, a sketch of which he gives in the lecture from which we quote. He also alludes to some cases of hydrophobia occurring in persons, who had been alarmed, supposing themselves to have been bit by rabid animals.—*Gazette des Hôp.*, No. 12.

THE ACTION OF CHLOROFORM ON THE BLOOD.

In the *Boston Medical and Surgical Journal* for March, Dr. C. T. Jackson says, "Chloroform consists of one equivalent of formyle and three of oxygen. When chloroform is inhaled into the lungs the oxygen is abstracted from the blood, and, combining with the formyle, makes formic acid, while chlorine combines with the blood as a substitute for oxygen. Thus a portion of the blood becomes chemically changed, disorganized, and rendered unfit for its vital functions." He further says, "I have now a phial of this blood (blood taken from a young lady killed by the inhalation of pure chloroform) before me, it having been kept in my office, exposed to temperatures from the freezing point to above 80° for more than six years, and yet it has not decomposed, nor has a single blood-globule settled to the bottom of the phial, nor has the colour changed in the least."

THE HEALTH OF THE HORSES OF THE AMERICAN ARMY.

PARAGRAPHS have recently appeared in various New York papers in relation to diseases said to be prevalent among the horses of the army. The Government has recently been investigating the matter. Mr. Wood, of Boston, accompanied by Mr. A. S. Copeman, of this city, has been through our entire lines on the Potomac, inspecting the horses of every cavalry regiment and company, and nearly every battery. Mr. Copeman arrived home from this service yesterday. He reports the stories of the prevalence of glanders among the horses to be entirely false. The inspectors did not find a single case of this incurable disease among the nearly 20,000 horses now in actual service, and but very few cases among the 8,000 animals now at the receiving-depôt in Washington.

Mr. Copeman considers the health of this immense army of horses remarkably good, and that the horses themselves, taken together, are an excellent lot. Those in service look much better than those at the receiving-depôt. In fact, nearly all the disease discoverable can be directly traced to circumstances incident to transportation. The good health of our army of horses is a matter only of less importance than the good health of our army of men, and we are glad to receive favorable assurances from so competent a veterinary authority as Mr. Copeman.—*Utica Morning Herald.*

SINGULAR VIEW OF GLANDERS.

M. GUILLON maintains that glanders of the horse is the analogue of smallpox in man. If he is right, glanders may be prevented by the inoculation of the cow-pox lymph (?)

IMPACTION OF AN IRON SKEWER IN THE ABDOMEN OF A DOG.

A SPANIEL puppy belonging to Mr. E. Harden, of North Gate, Bridgewater, was recently placed under the care of Mr. E. J. Bovett, veterinary surgeon, as its owner fancied it had broken a rib. The animal, on being placed on the table in Mr. Bovett's surgery, jumped to the ground, the

force of its fall causing a protrusion on the left side, which appeared at first sight to be another broken rib, On examination Mr. Bovett found an iron skewer, about four inches in length, to be imbedded in the animal's abdomen. Three inches and a half of the pointed part of the skewer, having been forced out of the pupy's side, were sawn off, but the remaining portion, having a head in the form of a ring, was obliged to be left in for a second operation. The animal is now progressing favorably. We hear that the cause of this mishap was that the dog had stolen some meat which had been left on a skewer for the cat, and had thus swallowed the skewer as well as the flesh.

PLEURO-PNEUMONIA. PROCEEDINGS UNDER THE 'CATTLE CONTAGIOUS DISEASE ACT,' AUSTRALIA.

A PROCLAMATION, dated August 2d, in accordance with the Act for preventing the propagation of contagious or infectious disorders in cattle in the colony, has been issued, prohibiting the introduction of any horned cattle from Victoria for the following three months. The penalty contingent is seizure of the cattle, and a fine, not exceeding £50 nor less than £10.

A NEW ELEMENT.

THE discovery of a new element, to which the name of dianium has been given, has recently been announced by the celebrated German chemist Kobell, making, with cæsium, rubidium, and thallium, the fourth simple body added by modern research within a comparatively short space of time.

THEORY OF NITRIFICATION.

MILLON has observed that *nitre* is always produced with regularity provided a humus product, an ammoniacal salt, and a mixture of earthy carbonates, are present, the solid mass being constantly moistened and exposed to the air. The action of the alkaline humate is to absorb oxygen, and this oxidation is transferred to the ammonia, which thereby becomes converted into nitric acid.

THE VETERINARIAN, DECEMBER 1, 1861.

Ne quid falsi dicere audeat, ne quid veri non audeat. —Cicero.

A PLEA FOR HUMORAL PATHOLOGY.

It has often been remarked that the tendency of medical science in the present age is to revert to the doctrine of humoral pathology. If this be so, it will nevertheless be admitted that she is not groping her way along a dark and obscure path, but journeying onwards in one which is illumined by the light of anatomy, physiology, and histology, and that, being now unincumbered by the philosophy of classic Greece, her progress is safe and her destination secure. It must not be thought, however, that we opine that the science of disease will ever again come under the entire dominion of the humoral pathologist, but only that the investigator of our day will give more heed than hitherto to the direct influence of the fluids in the production of affections of the solids.

Accustomed as we daily are to investigate the causes of ill health among animals, we have long been satisfied that many of their maladies have their origin in a morbid condition of the blood. What, it may be asked, are epizootic and enzootic diseases—pass current by whatever names they may—but so many instances of contaminated blood *ab initio?* How numerous are the sporadic affections which we recognise as being due to miasmatic and other morbific matters entering the organism in the respiratory process, and exerting their deleterious effects immediately on the elements or proximate principles of the vital fluid.

Nor is it in this way alone that the blood becomes deteriorated. Look at the direct influence of the food and water which are partaken of by herbivorous animals in particular. Look, again, at the effects of a long-continued elevation or even diminution of temperature, a humid or dry atmosphere, on the *quality* as well as the quantity of their food and the function of their respiration. See also their constantly exposed bodies to every vicissitude of weather, and we shall

find in these things, separately or combined, more than enough to prove that the blood must be the first to suffer. The fluid will necessarily be rich or poor, pure or impure, in proportion to the completeness of the change it undergoes in the process of respiration and the quantity of albuminous and saline materials which enter it in a given space of time from the assimilation of the food; and thus will it be enabled to maintain or not—assisted by the secretory and excretory organs—that amount of purity of composition and proper specific gravity necessary for its free circulation and the yielding up of its nutritive and vital properties to every tissue of the frame.

We have been led to make these observations by having, on several occasions during the past summer, and again very lately, been called upon to give advice in cases of alarming fatality among cattle. In every instance an investigation, conducted on the spot, has satisfied us of the source of origin of the disease; and that we rightly judged, receives confirmation from the circumstance that the preventive measures which were enjoined have proved, without exception, most effective in arresting its further ravages.

In one case, occurring during the prevalence of very hot weather, the fatality arose from giving the animals—already in a state of plethora—an inordinate quantity of oil cake and rich nutritive grasses. With such an elevated temperature, the hydro-carbonaceous materials could neither be burnt up nor deposited in the form of fat *fast enough* to free the blood sufficiently of them, and death resulted as a consequence. It was singular that in these cases a fibrinous effusion, three fourths of an inch in thickness, had taken place upon the outer surface of the heart, but that the vessels of the organ give no evidence of inflammatory action. This remarkable lesion was associated with others which as plainly indicated an altered condition of the blood, although they were of less importance to the continuance of life.

In another instance several valuable animals fell a speedy sacrifice to attacks of passive congestion of the vessels of the brain, accompanied with enormous engorgement of the spleen, and transudation of vitiated and grumous blood into

the small intestines. These cases also occurred during a high temperature, and were due to the combined influence of heat, the feeding on grasses somewhat ergotized, and partaking of water rendered impure by an admixture of sewage, and this to a greater extent than it otherwise would have by the gradual drying up of the pond.

In a third case, the last we shall mention, and which occurred during the remarkably warm and humid month of October, the malady was not confined to a particular farm, but extended over an entire parish, and even beyond its bounds, destroying upwards of fifty animals in a very short space of time. It evidently depended on the amount and watery condition of the herbage, the character of the soil—a wet, clayey loam—and the system of management pursued by the owners of the cattle. The humid and warm temperature acting on the vegetation of a rich and retentive soil, produced a greater quantity of grass than, as a rule, the pastures contained in the month of June. Such grass, however, was necessarily very deficient in the elements of nutrition, and this in proportion to the amount of water which it contained, and therefore unfitted for the making of pure blood. The abundance of it, also, led to the cattle being kept entirely on the pastures night and day, without an allowance of any other food. Besides these causes of disease, the fogs which hung over the fields were often so dense as to hide the animals from observation when only a few yards distant, excepting for an hour or two in the middle of the day. The consequence was, that local *hæmostasia* resulted, or, in other words, the contaminated blood became stagnant in the vessels. Sometimes this took place in one part of the organism, and sometimes in another. The head and throat were the principal seat of it, but occasionally the fore or hinder extremities; nor were the internal organs exempt, as the lungs would now and then be primarily affected.

In many respects the local symptoms were allied to those observed in *hæmatosepsis*—black leg—but no gaseous matters were evolved into the areolar tissue, as is the case in that malady. Cattle of all ages also were its victims, and that without respect to their being milking or fattening

animals or young stock. A complete change in the system of management and in the kind of food, quickly arrested the further progress of this fatal disease.

This epitome must suffice to show the correctness of the position we have assumed, and at the same time prove to the veterinary surgeon that his professional reputation does not altogether depend on the employment of curative measures in arresting disease. Too many, we fear, imagine that their province is the application of these alone. To such we would say that, until they consider themselves as the conservators of the health of the animals of the farm, and investigate with a view to their removal the various causes of disease, they cannot hope to occupy their rightful position in the estimation of a discerning public.

FRENCH VIVISECTIONS AND THE SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS.

Animated, we trust, by an ardent desire to second the laudable efforts which are continuously put forth in the cause of humanity by the Society for the Protection of the Lower Animals from Cruelty, we have readily lent our feeble aid throughout, in assisting it in removing from the escutcheon of medical science the great blot of vivisection.

Our readers will remember that the statements which were made by Professor Spooner, in his introductory lecture of last year, with reference to the cruelties which were being daily practised in the name of science at several of the French veterinary schools, reopened a question which had too long been allowed to slumber almost in a state of forgetfulness.

It received at the time much opposition, and even a direct denial, from some obdurate defenders of the system, as also of the necessity of thus instructing veterinary pupils; which, however, only tended the more to keep the question alive in the public mind.

The society, under such circumstances, wisely determined to inform itself of the full details of the practice, as adopted at Alfort and other scholastic institutions, and, if found necessary, to leave nothing undone which could effect its

discontinuance. In undertaking this duty it felt that it had not to deal with an abstract question of cruelty, but with one which had the support of many eminent men of science, on the ground of its usefulness in acquiring a correct knowledge both of surgery and the treatment of disease in general. Steady perseverance in a righteous cause is, however, sure to be rewarded in due time by success, and such has been the experience of the society in this undertaking.

In our May number we recorded that a deputation had a second time gone to Paris, and been admitted to an audience with the Emperor, and received from His Imperial Majesty an assurance that an inquiry should be instituted, without prejudging the scientific part of the question. Faithful to his promise, this has been done, and we, in common with many friends of humanity, await the result with anxiety; but nevertheless with full confidence in the integrity, wisdom, and benevolence of the commission which has been appointed.

We earnestly plead for the total abolition of all repetitions of experiments on living animals, for such hitherto have disgraced the science of medicine. We are well aware that from time to time important physiological questions will arise, that bear directly on the art of healing and the prevention of suffering, both in man and the inferior creatures, and which will necessarily require the infliction of pain on a living animal for their correct elucidation; but even this—legitimate as it may be—must be kept within proper bounds, or the enthusiasm of many will lead them from acts of necessity to the performance of those akin to wanton cruelty.

In making these remarks we but echo the sentiments of every true friend of science, and we rejoice to observe that so able an exponent of these views as the *Lancet* can be found. This will appear from the following article, which we venture to extract in full from its pages, although the writer finds rather more excuses for the practice than we could wish to have seen.

"THE ETHICS OF VIVISECTION.

"The Parisian mission of the London Society for the Prevention of Cruelty to Animals has already brought forth

results which must be satisfactory to themselves and the lovers of humanity. The vivisections habitually practised at Alfort, Lyons, and other veterinary schools, have been long denounced by the most scientific persons as useless and abominable cruelties; they are such as would not be tolerated for a moment by the feelings or the laws of Englishmen; and if the London Society has gone rather far afield in directly appealing to the Emperor of France to arrest these proceedings in his veterinary schools, they have at least done a good work. It might have been a more graceful and appropriate manner of advancing their object to have engaged the learned medical academies to take an active part in the abolition, which would have partaken less of the character of 'foreign aggression.' For the present, however, the unhappy animals impounded and not claimed, or otherwise obtained at the establishments, will not be handed over to the students, slowly to die under the agonising succession of operative tortures, practised just to form the hand of the neophyte. The edict of the police has gone forth against this practice. We have more than once condemned this barbarity, and rejoice that it will terminate—we hope finally.

"The larger question, however, to what extent, and under what circumstances, experimental vivisection may be carried on for purposes of original investigation, cannot be decided so hastily or in so peremptory a manner. The Emperor has very properly called for a report from the Academy of Medicine on this matter; and the commission appointed to report consists of MM. Cruveilhier, Cliquot, Claude Bernard, Robin, Moquin-Tandon, and Le Blanc. The objections raised as to the practice of vivisection as totally reprehensible are clearly founded upon an imperfect statement of the facts. The remark that the results of Magendie were vitiated by the disturbance effected in the nervous system owing to the shock of the experimental mutilation, shows that either only a few of these results are known to the objectors, or that the others are disregarded. It must be observed that this question is a very important one, since it affects in a very material degree the progress of physiological science, on which medicine now so largely builds, and to which we look hopefully for our greatest future aid. Not to go beyond two problems which are at this moment in process of solution—how else could Dr. Pavy have established that the sugar-forming function of the liver, described by M. Claude Bernard, was due to a post-mortem change; and by what other means could we acquire information upon this subject, so important to our knowledge of the healthy actions of digestion, and of

diseases so fatal as diabetes? Again, by what other means could be carried on those important inquiries of Dr. Richardson, in which he has synthetically traced a mode of origin of endocarditis and joint inflammation by injecting lactic acid into the peritoneal cavity; or in which he has indicated the connexion of cataract with diabetes, or at least one mode of its production, by injecting sugar-water into the fluids of the body? By what arbitrary police regulations can scientific men be bound in these investigations? Is it permissible to anatomise a frog, of which some scores were recently leaping about the table, variously mutilated, at the Royal Institution of Albemarle Street, before an audience composed partly of ladies? And is it interdicted to tie the arteries or inject the veins of a guinea-pig? Is the line to be drawn at rabbits or dogs, or asses or horses? It is obvious that no arbitrary regulation of police can decide a question so variously complicated. The progress of a science which aims at the amelioration of human suffering must be respected; and the rules for carrying out his investigations must be left to the conscience of the physiologist. Useless barbarities cannot be reprobated too strongly. The most accomplished physiologists are also the most humane; but a wide latitude must be left to each man, who will be individually responsible for the use which he makes of this power. Bell grieved over the rabbits which he sacrificed; and Dr. Brown-Séquard regarded with almost the affection of a parent a pet guinea-pig in which he had succeeded in artificially producing epilepsy; that guinea-pig, in fact, contributed greatly to the progress of medical science, and was worthy of his affection. Marshall Hall first removed the brain of his frogs, thus destroying all consciousness, before proceeding with his experiments on the diastaltic function. Finally, it may be said, that sometimes the sufferings of animals may be everted by the use of anæsthetic agents; and their title to the employment of these agents is the stronger because they add in a great degree, by the results of experimentation, to our knowledge of the laws of anæsthetization."

THE EARLY EMPLOYMENT OF NAILED SHOES TO THE FOOT OF THE HORSE.

The wish expressed in our last number for further information on the antiquity of attaching the shoe by nails to the foot of the horse has soon been realised; and, as our

readers will perceive, we are now enabled to record the further researches of Mr. H. Syer Cuming thereon. In the present state of the question it may be, perhaps, too much to assert that the practice was adopted by the ancient Greeks; but that nailed shoes were very early employed by the Romans—contrary to the general opinion of authors—seems to be fairly proved. M. Defays confirms the statements of Mr. Cuming on this point, and says, in his *History of Horse-shoeing*, as translated by Mr. Ernes, and published in our January number, "that towards the second and third century of our era the Romans had already iron plates *fastened with nails* to their horses' feet." "Shoes of this description," he adds, "are found in the ruins of Grachwye, near Berne; in the Roman remains of Avencium; in the Roman camps of Mount Terrible and Dalheim; in the neighbourhood of Jodoigne, Louvain, Echternach, Stuttgardt, &c. In all places where the Romans have left traces of their sojourn the remains of their horse-shoes have been found by the side of their relics. These shoes are particularly distinguished by a groove or fullering extending from heel to heel, in which the nail-holes are placed."

Coming to later times Mr. Syer Cuming has shown in a very satisfactory manner, that the early Teutonic races of Britain adopted the same system of defending the feet of their horses from injury, following, probably by imitation, the practice of their Roman predecessors.

We again express a hope that these interesting and instructive investigations will be continued, and that they will receive assistance from the members of our profession. Many veterinary surgeons could, we believe, furnish valuable information to the archæologist, by describing the form, size, and other particulars, of antique shoes in their possession, some of which may, to their knowledge, have been found in exploring Roman remains, as also in the digging of wells, shafts, &c., or in the making of railways. Of our own knowledge many such shoes are extant, as we have often seen them in our walk through country establishments. We will readily give to such helpers all the assistance in our power.

Extracts from British and Foreign Journals.

THE OIL-SEEDS OF COMMERCE.

GREAT as has been the extension of commerce and the progress of agricultural supplies within the last few years, they are yet far from commensurate to the wants of Europe. It is therefore a wise provision that new discoveries arise either out of the progress of science or the extension of foreign agriculture to meet the increased demands. When the oils yielded by the whale fisheries declined, and by their enhanced price became expensive, and inadequate to the wants of the consumer, increased attention was given to the production and manufacture of vegetable oils, and enormous quantities of oil-seeds for crushing, from Europe and the East, and solid oils from Africa, were obtained. Even these, however, large as have been the imports of late, were insufficient to meet the progressive demand; and now additional supplies of rosin-oil and mineral oils are coming forward, obtained either from coal or from asphalte and petroleum. The mineral oil springs in some of the states of America have turned out complete fortunes to the owners of the land, so cheap and abundant is the spontaneous supply from the wells sunk, and so easily is it purified. The vegetable oils, however, provide, and will long continue to do so, the bulk of the consumption.

The importation of the oil-seeds and oil-cake is a matter in which our readers necessarily take an interest, and therefore we may with propriety draw attention to the growing trade. Four years ago, when writing on this subject, we gave the statistics of the imports of seed and cake for a series of years; but these, by comparison, now look exceedingly trivial. In 1855 our imports of linseed were but 757,000 qrs., and of rapeseed 162,352 qrs. Last year the imports were 1,255,000 qrs. of linseed, and about 300,000 qrs. of rapeseed. So with oil-cake; the foreign imports, which in 1855 were but 80,659 tons, rose in 1860 to upwards of 100,000 tons.

Besides the two principal oil-seeds already named, we imported in 1859 about 183,000 qrs. of poppy, sesame, sursee, and unenumerated oil-seeds. The specific returns of imports of these for last year are not yet published by the Board of Trade.

While the consumption of oil and oil-seeds was so much larger than usual last year, the stocks held are exceedingly small, and prices high. The manufacture of linseed oil in the United Kingdom in 1860 was estimated at 65,000 tons; of which 33,700 tons were exported. The home production of oil-cake was also considerably in excess of former years. The stock of rapeseed held was only about 18,000 qrs. at the commencement of this year, while of poppy and Niger seeds there were none on hand. Rape and seed oils, we are told, continue to sustain the same prominent position in our markets they have done for years past, and, independent of a large home make, 9500 tons were imported into the kingdom last year.

A new kind of grease made from rape oil is now manufactured at Leipzig. The mass of grease, or fat, is quite pure, without taste or smell, and, according to medical certificates, contains nothing in the least injurious to health. In cookery, it answers fully the purposes of butter, with the advantage that, instead of the usual quantity of butter, one third in quantity of this rapeseed-grease will suffice. The butter sold in London is bad enough, in all conscience, and we therefore trust that, for edible purposes, the rape-grease may be kept by our German friends.

The ground-nut, as it is popularly termed, the subterraneous fruit of the *Arachis hypogæa*, is now cultivated very extensively as an oil-seed, especially at the Gold Coast, Gambia, and Sierra Leone, on the west coast of Africa. We imported in 1859, 1124 tons from the Gambia, 1116 tons from Sierra Leone, and 147 tons from the Gold Coast. But large quantities are sent direct thence to France. Thus in 1857 13,554 tons of ground-nuts were exported, of which 11,300 tons went to France, and 1300 to the United States. From Sierra Leone 243,123 bushels were sent away, of which 206,503 went to France. The French imports from their own African possessions are also considerable; and it is stated that from 70,000 to 80,000 tons of ground-nuts are annually received, chiefly at Marseilles.

In the Southern States of America its culture is much attended to, and there, and in parts of the West Indies, it is called pindar and pea-nut. In Brazil it is known under the name of mindoubi. In Natal and the Cape, as well as in the Indian Presidences, the ground-nut is now extensively grown; and in Spain and Algeria it is found to rank among the more advantageous objects of field cultivation. The price has of late been steady in our market for them at £16 10*s*. per ton. The prepared oil, expressed from the

seed or kernel, is of the finest quality, and fit for some of the most delicate purposes to which oil is put. Under the name of Gingelly and Teel, quantities of sesamum seed are imported from India and Egypt, and occasionally from other quarters. The small seeds are of all colours, varying from white to black. When carefully pressed, sesame oil is quite equal to the best olive. On the coast of Africa and in some parts of the West Indies sesame is called bennie seed.

Cotton-seed oil is now a large article of commerce, its seed being abundant, and the difficulties of removing the husk having been got over. In cotton-seed the oil is in smaller proportion, and the albuminous compounds larger, than even in the best linseed cake.

There are other seeds, of less commercial importance, which are occasionally used to obtain oil from, among which may be enumerated pumpkin, melon, and cucumber seed in India, and also under the name of Agusi, in Western Africa; dodder-seeds, or gold of pleasure (*Camelina sativa*) in the south of Europe and Canada; sunflower-seed, cress-seed, niger-seed, the small black seed of *Guizotea oleifera*, called "ramtil" in India; radish-seed, and safflower-seed (*Carthamus tinctorius*)—the oil of this makes excellent soap. Mustard-seed is also pressed for oil.

We have confined our remarks entirely to the oil-seeds properly so called, distinct from the oils obtained from nuts and other vegetable sources, which furnish so large a proportion of the supplies—as the palm, cocoa-nut, olive, bassias, vegetable tallow, and wax, which can scarcely be looked upon, in an agricultural point of view, as objects of agriculture, although they are of high importance, both to the producer of the oil, the merchant, and the manufacturer.

Professor Anderson well observed, some time ago, that the introduction of new oil-seeds into commerce is a matter which very much depends upon the farmer; for, in the more familiar seeds, such as linseed and rape, the value of the cake often exceeds half that of the seed, and the price obtainable for it is a matter of the utmost moment to the manufacturer, who cannot afford to use a seed unless he can sell the cake to the farmer. He must be guided also by the proportion of oil the seed will yield in the press, and hence a knowledge of the quantity of that substance contained in them is of importance to him. A knowledge of the composition of these oil-seeds is important also to the farmer, because it is quite possible that some of them may be sufficiently low-priced to permit them to compete advantageously with linseed, which is occasionally used, more particularly for feeding calves,

although its high price necessarily restricts its employment.

We may, hereafter, touch upon the composition and comparative feeding properties of the oil-cakes obtained from many of these seeds, whether home-made or imported.—*The Farmer's Magazine.*

THE PRINCIPLES WHICH REGULATE THE BREEDING OF FARM-STOCK.

By Henry Tanner, M.R.A.C., Professor of Agriculture and Rural Economy, Queen's College, Birmingham.

Prize Essay.

The careful observer of nature has ample proof that her works are all carried out in accordance with fixed rules, and no one has better opportunities for securing this evidence than the agriculturist. A modification of circumstances may cause a variation in the results; still there is, throughout his experience, a thread of evidence which proves the existence of established laws. The importance of farm-stock is daily becoming more fully recognised, and truths applicable to the whole class can be traced out and determined most satisfactorily by attention to individual specimens. The variation in the feeding capabilities of different animals is a fact which needs not to be enlarged upon, for every farmer knows that whilst some animals are such good feeders that they pay by an increase of weight for all the food which they consume, others for the purpose of fattening would be dear as a gift. Assuming, then, that such a difference exists, I propose to show and explain, as briefly as possible, the rules which govern the results required and the system to be followed in putting them in practice.

It materially lessens our difficulty to know that in the breeding of all varieties of farm-stock—cattle, sheep, pigs, &c.—the results seem uniformly to follow the same fixed but simple laws. It is an old and approved maxim that "like produces like;" but this rule, though generally true, may be misapplied, when the error will be demonstrated by the contradictory evidence of practice and experience. If an animal is capable of transmitting any character to its offspring, it must possess that which it conveys, although at times quali-

ties may predominate in the offspring which were almost latent in the parent. If, therefore, any quality or character is rendered hereditary, it must correspond with that inherent in the parent from which it descended. If, however, I breed from a female possessing certain qualities by a male distinguished by an opposite character, it is clear that the offspring cannot perpetuate *both* of these characteristics, and the result appears antagonistic to the maxim that "like produces like." This brings us at once to the consideration of one of the most important principles connected with breeding, namely, that although "like produces like" (for it can produce nothing else), still when the parents possess opposing qualities the preponderance is exercised by that one which possesses the hereditary tendency in the greatest strength. If, for instance, a cow having any special peculiarity of form is put to a bull having the opposite character, the offspring will assume the character of that parent which possessed the greatest hereditary powers in this respect, or, in other words, the greatest purity and unity of influence. If these hereditary powers are under our control, it is important to consider by what means they may be increased or diminished.

In breeding from a ram and ewe possessing a similarity of type, the produce of such a union will of necessity also possess the like character, but in a higher degree. Thus the result of breeding stock of similar character is that these peculiarities are not only perpetuated but intensified in the offspring. Provided that the parents possess similarity of type in any given particular, every successive generation thus produced acquires an increase of hereditary force, by which we mean the power of imprinting its own stamp upon its progeny. But in like manner as this power accumulates when there is a similarity of character, so also does it diminish when the parents have opposite or antagonistic characters. Suppose that a well-bred ram, by careful breeding through several successive generations, has acquired strong and valuable hereditary powers (which, for illustration sake, we will represent in figures), say equal to 100. If this animal be put to a ewe of a totally different character, say having hereditary power equal to 60, the result would be that the offspring would still possess the same character as the ram, because of his superior hereditary power; but the hereditary capability of the offspring would be reduced to say $100 - 60 = 40$. Supposing the offspring to be a ram, at a subsequent period both the sire and offspring may appear equally perfect in form and general character; but

the power of hereditary transmission being so much greater in the sire than this offspring (in proportion of 100 to 40), the former would be far more valuable as a breeding animal, although the difference in the capabilities of the two would be entirely hidden or latent. If you breed from animals possessing a similarity of type, the offspring will possess the same character, but with a greater power for the hereditary transmission of this character. On the other hand, animals having opposite characters mutually weaken each other's influence, and the offspring only possess the power of hereditary transmission in a reduced degree.

This power of perpetuating character is not confined to any one quality, but it extends to every peculiarity of the animal, whether it be similarity of feature, configuration of the body, general habit of growth, disposition for fattening, the formation of milk, healthy constitution, predisposition to disease, temperament—all are alike hereditary, and are modified in their transmission by the mutual influence of the parents. It would appear as if every individual point of character were thus controlled and balanced according to the respective tendencies of the parents, and that the resultant character represented a series of balances, sometimes in favour of the male, at other times in favour of the female. The dam might succeed in communicating the general form to the body, but be unable to overcome the stronger power of the male over some certain portion of the body. The dam might be naturally deficient, for instance, in her hindquarters, and good in other parts, and under the influence of a sire having a powerful tendency to produce a good hindquarter she may be compelled to yield to his superior influence. In certain points of character where they corresponded, the influence would be increased. In some particulars the dam might predominate, and in other respects the sire might be most influential. Thus the hereditary powers of carefully bred stock will represent the maximum of good influences and a minimum of those which are undesirable.

In our wild animals we have natural laws operating whereby they are preserved from degeneracy. Thus their powers of vitality are preserved and constitutional disease reduced to its lowest point. Immediately the male has passed the prime of life and his natural vigour begins to diminish, he ceases to hold his position against younger males of more strength. Thus in the sanguinary conflicts amongst the male animals of wild species, in which the supremacy is contested, we see one means established by Nature for se-

curing the perpetuation of the species to the strongest and most vigorous males. In like manner, those of unripe age, as well as those which are the subjects of disease, are held in check by those which are vigorous and healthy, and the consequence is that a strong constitution is secured to their offspring. By domestication we interfere with the action of these natural laws. We seek to establish and perpetuate certain peculiarities of the animal system which are unnatural, but which are, at the same time, very desirable for our comfort and prosperity. There are three special objects which the general breeder seeks to attain with a view to direct profit, each of which requires a special mode of procedure which cannot be departed from without loss. These qualifications are—

A liberal production of good milk;
An economical formation of meat;
And the preservation of purity of blood.

I shall endeavour to prove that we have these important points of character far more under our control than is generally imagined, and that from want of due consideration we often frustrate and impede our designs.

(*To be continued.*)

HORRIBLE CRUELTY TO A HORSE.

COUNTY MAGISTRATES ONCE MORE.

(Extracted from the 'Dispatch.')

"THIS very day, Sunday, the 17th of November, at least a hundred sermons enforcing the duty of humanity to animals will be preached in the churches and chapels of the metropolis. The Royal Society for the Prevention of Cruelty to Animals has enlisted in the cause a large number of the ministers of all denominations, who will make a simultaneous appeal to their hearers to be merciful towards the brute creation. We commend most earnestly to the attention of preachers and congregations a case reported in another column, which shows how very little protection there is in some cases for poor dumb creatures. Mr. John Donnithorne Taylor, a person possessed of large property in the neighbourhood of Southgate, Middlesex, was prosecuted by the society for atrocious cruelty to a horse. Love, the officer of the society, stated on oath before the magistrates at Edmonton, that he called upon the defendant respecting the charge, and Mr. Taylor admitted that the horse had, by his instruc-

tions, been tied up for eight days without the means of lying down, likewise without food except a little water, and, after five days, a mouthful of hay ; that he had previously beaten it until he was so wearied that he could no longer hold the stick. Love went into the stable, and saw the horse tied up and in a most lamentable condition, Mr. Taylor also said that he had on a previous occasion kept a horse for eleven days in a similar position without food! When asked if his servants might not have supplied food, he replied 'Certainly not, they know better than to disobey my orders,' thus clearly acknowledging that he was the author of the diabolical cruelty. Two veterinary surgeons of eminence deposed to the terrible sufferings the poor animal must have endured ; and, indeed, scientific evidence on such a subject was unnecessary, so evident must it be to every one. Yet the Bench allowed Mr. Taylor to escape without punishment, by dismissing the summons, because it was not supported by evidence to prove that he was guilty of the cruelty, although he himself had fully admitted it. Why, we may ask, did not Mr. Sleigh, who appeared for the prosecution, call the grooms and others, who could have proved the case? Mr. Serjeant Ballantine demanded the name of the person who informed the society of the cruelty. It is well for him, perhaps, that his name was not given up. The learned serjeant called upon the Bench to dismiss the summons, and not cast a slur on the character of a gentleman of rank! The Bench, consisting of E. F. Busk, Esq., chairman ; J. Mayer, Esq. ; F. Newman, Esq., and Colonel Somerset, responded to his appeal ; and Mr. Taylor is henceforth at liberty, at least in the neighbourhood of Edmonton, to starve and torture horses, on the pretence of breaking them in, to his heart's content. We have just been learning from Mr. Rarey the true art of subduing restiff horses, by the application of the law of kindness ; and yet here comes an instance, which astounds us, of total immunity from punishment of the perpetrator of most atrocious cold-blooded cruelty towards a helpless animal."

Case.—At the Edmonton Petty Sessions, held at the Angel at Edmonton, on Thursday afternoon, Mr. John Donnithorne Taylor, a gentleman of large landed property at Southgate, appeared in answer to a summons taken out against him by the Royal Society for the Prevention of Cruelty to Animals, charging him with having, on the 3d, 4th, 5th, 6th, 7th, and 8th, of October, unlawfully and cruelly ill-treated, abused and tortured a certain horse, contrary to the statute, &c. The Bench was composed of E. T. Busk, Esq., chairman ; J. Mayer, Esq. ; F. Newman, Esq., and Colonel

Somerset. The greatest interest was manifested in this case, in consequence of the high position the defendant held in the district and his reputed connexion with the magistracy of the neighbourhood. Mr. Sleigh was specially retained to conduct the prosecution on behalf of the Society for the Prevention of Cruelty to Animals, and Serjeant Ballantine was specially brought down for the defence.

Mr. Sleigh in opening the proceedings, said he had no doubt that the Bench would receive, as he did at first, with a great amount of incredulity the statement of cruelty he should have to lay before them. It appeared from his instructions that Mr. Taylor was a gentleman of large landed property in the neighbourhood, and that the society, in consequence of information they had received, sent their chief officer, Mr. Love, down to see him. Mr. Love called upon him accordingly, and having presented his card, and told him who he was, entered into a conversation with him, when the defendant admitted that the information furnished to the society was substantially correct, and that what he had done was done for the purpose of breaking the horse's temper, and not with any idea of torturing it. Having alluded to the various sections of the Act of Parliament which defined what cruelty to a horse was, and what the punishment should be for such acts, he contended that if he proved that a horse had been kept for five days without food it would come under the denomination of cruelly ill-treating a horse, and subject the person guilty of such conduct to all the pains and penalties of the Act of Parliament.

Mr. William Love stated that he was the chief constable of the Royal Society for the Prevention of Cruelty to Animals, and had been in their service for about eight years. In consequence of a communication which reached the society, he proceeded on the 11th of October to Southgate, and saw Mr. Taylor, the defendant. He said a complaint had been made at the office of the society that he (the defendant) had a horse tied up in such a manner that it could not lie down, and that, in fact, he was starving it to death. Witness said his instructions were to come to him (defendant) direct, and ascertain the facts, rather than make inquiries in the village, and give rise to scandal. The defendant then said, "Well, I will tell you all about it. This is a colt I have bred myself, and I sent it to London to have it broken in, but I expect that it got into wrong hands and got knocked about and spoilt. I found that it was most refractory, and I beat it till I could beat it no longer, for I found that if I beat it to death I could do nothing with it. When I found beating useless I

said, 'Well, I will pinch your stomach, and see if that will bring you to subjection.' I then put it in a break, and kept it there for two days, but finding that was of no use I took it out and took it to the stable, where I tied it up, so that it could not lie down, and it has not lain down since. That is about eight days ago. For the first five days it had nothing to eat, and only a little water to drink. I then gave it a little hay, and it has had hay once or twice since. I am going to take it out of the stable to-day, and if it goes all right it may have some more hay, but if it does not it shall not have any." Witness said, "How long do you say that you have kept it without food?" and defendant replied, "Let me see—it was about yesterday week that I first put it into the break." Witness said, "But have you not given it anything to eat during that time?" and defendant replied, "No, but I have given it a little water, you know." Witness remarked, "Are you sure that none of your men have given him anything to eat?" and he replied, shaking his head, "They know better than to disobey my orders." Witness said, "But are you not afraid of injuring his constitution?" and he said, "No, I have kept a horse for eleven days without food without injuring him." Defendant then offered to show witness the horse, and the latter went to the stable, where he saw a man who showed him the horse called "Wonder," upon which the alleged cruelty had been practised. The horse was in a low condition, hollow in its flanks, and its head was hanging. It appeared to be very ill and very anxious; dull and heavy about the eyes, as if suffering from pain. The horse was thoroughly out of condition.

Mr. Serjeant Ballantine cross-examined the witness very severely, and in reply to his questions he stated that he did not know who gave the information to the society. He did not know his name, or whether he was present, nor had he told him to be present. He did not know whether the name was known to the society. He did not know whether it was a discharged groom of the defendant's who gave the information. He did not know the name of the man who showed him the horse. He made a note of the conversation with Mr. Taylor at the time, and had it with him. (On the request of Mr. Serjeant Ballantine, the note was produced and examined by him.) The defendant did not say why he had kept the horse eleven days without food.

By the Bench—He did not know the age of the horse, but it was in a low, bad condition. He did not feel his pulse.

Professor Spooner, of the Royal Veterinary College, stated that, in his opinion, a horse could not be kept without food

for a period of five days without producing to the animal a great deal of suffering, perhaps not acute pain. The horse was a domestic animal, which, from its construction, required feeding three or four times a day, and to keep a horse for five days without food was an act of the greatest cruelty.

Mr. Serjeant Ballantine—"We don't want an expression of your opinions; you are here to give scientific evidence, and not to give opinions that are not asked for."

Professor Spooner—"I am here to answer questions and explain certain matters connected with the case, and I shall do so."

By Mr. Sleigh—The want of food in the stomach and intestines would cause spasms, which would put the horse in acute pain, and then he would show it by pawing with his feet. Tying the head of a horse up, as he had heard the head of the defendant's horse had been tied up, would disarrange the nervous system, and would, in his opinion, be cruelty to the animal.

Cross-examined by Mr. Serjeant Ballantine—Any punishment would disarrange the nervous system, the same as flogging a boy. The duty of persons employing punishment was to do it in a moderate degree; but it seemed to him that to keep a horse for five days without food was an act of gross cruelty. He did not contend that punishment was not to be applied to animals and persons, but it was a question of degree, and that was to be decided by persons that were competent to judge of it. Some animals were extremely obstinate and unmanageable. There was not a great variety of opinion as to the mode by which the subjugation of a horse was to be come at. There was some difference of opinion as to the treatment of Rarey towards his horses. Some thought it a failure. There were some horses that were jibbers and very refractory, and could not be cured, while others could be cured only by measures of severity, which, in his opinion, would be extreme by cruelty. He thought a horse of that kind should be destroyed rather than resort to the cruelty that would be necessary to break it in. He thought that a horse might be punished judiciously, the same as a child. He was not a follower of Rarey; he thought that his plan was very consistent, and did not subject the animal to much torture. It was quite possible to convince a horse of the superiority of his master without resorting to cruelty.

Re-examined—There was no circumstance in his opinion under which a horse could be kept five days without food without great torture.

By the Bench—He was aware that some horses never lay down for weeks or months—some not at all, but these were

exceptions to the rule. He did not lay much stress on the animal being kept standing up, as it would be able to recover that; but what he thought most cruel and injurious was depriving the animal of food for five days.

Mr. Richard Vines, of 3, College Street, Camden Town, said he had been connected with the Royal Veterinary College for fourteen years previous to 1838, and from the evidence he had heard, the horse having his head tied up, so as to prevent him from lying down, and being kept without food, was most detrimental to the animal, and might have caused inflammation of the bowels and lungs.

This was the case for the prosecution.

Mr. Serjeant Ballantine then addressed the Bench for the defence. He said he had now to answer a summons that had been taken out against a highly respectable gentleman, and that had been attempted to be supported in a most extraordinary manner. The prosecution had brought the matter forward, and had spoken of a conversation that had taken place at Southgate Park between the officer and the defendant, a conversation which he could not contradict, as there were no witnesses present. The learned counsel then proceeded to contend that the evidence of a single witness, unsupported by corroborative testimony, was not sufficient to justify the magistrates in casting a slur upon the character of a gentleman of the defendant's rank. True, they had got admissions from the defendant which, though to a certain extent correct, had been coloured by the officer. He then proceeded to contend that the treatment the defendant had subjected the horse to, though severe, had been conducted and regulated by experience; that the horse had been watched every four hours, to see that no injury had happened to it; and that the result of this treatment had been a great success, as the horse was now a good, sound, safe and excellent animal, perfectly safe to ride and to drive, and exhibiting no signs of injury from the treatment it had been subjected to.

The Chairman said that they were in a difficulty. They had no direct evidence of the commission of the alleged offence with the exception of the slight portion where Love saw the horse. On the other hand, the defendant had admitted that part of the allegation was true, but had not stated to what extent. Under these circumstances the Bench felt that there was not sufficient evidence to justify them in convicting the defendant, and they must therefore dismiss the summons, at the same time stating that they did not wish to throw any slur on the society, as they considered it a very admirable one.

The summons was then dismissed.

ON THE COLOUR-TESTS FOR STRYCHNIA, AND THE DIAGNOSIS OF THE ALKALOIDS.

Being the substance of part of the Croonian Lectures for 1861, *delivered at the Royal College of Physicians.*

By William A. Guy, M.B. Cantab., Fellow of the College, and Professor of Forensic Medicine, King's College, London.

(*Continued from p.* 484.)

There is still one point connected with the answer to the first of the four questions propounded in my first communication which requires to be considered. The simple comparative experiments which I have described appear to warrant the conclusion that the colour-developing substances are best applied in the solid form; but it is quite possible that the quantity of these substances used in the experiments may sensibly affect the development of the strychnia-colours. I accordingly put this question to the test of experiment.

I placed four equal drops of the solution of strychnia in sulphuric acid ($\frac{1}{200}$ grain to the *drop*) on each of three white slabs. I added to the first group of four drops, bichromate of potash; to the second, peroxide of manganese; to the third, permanganate of potash; to the first drop, in each case, a minute fragment of the test, and to the second, third, and fourth drops, a larger and larger fragment. This simple experiment yielded the following results:—With the bichromate of potash I obtained a perfect result with the smallest quantity of the salt, but with the larger quantities only the characteristic primary colour, the last secondary colour, or the colour which the mixture assumes after exposure for one or two minutes, was yellow-brown instead of bright brick-red. With the peroxide of manganese I obtained two perfectly characteristic results with the two smaller quantities, but with the larger quantities less characteristic secondary results. In the first two experiments with the smaller quantities the mixture assumed the usual clear, bright brick-red as the ultimate tint, while in the third and fourth experiments it continued for a long time to retain the second or mulberry tint. With the permanganate of potash the reaction was quite characteristic in the two experiments with the smaller quantities of the salt, but the third assumed, after short exposure, a pink, instead of a vermilion tint, and the fourth took on at once a rich red-brown tint, and, therefore, failed as a test.

It is evident, therefore, from these experiments, in which all the elements were equal, except the quantity of the colour-developing substance, that in order to ensure a successful and in every way characteristic result, we must operate with small quantities of the colour-developing reagents. We must use small fragments of the substance in question. If we think that we are dealing with such quantities of the alkaloid as the two-hundredth of a grain, we should use a fragment not exceeding the size of an ordinary pin's head; and this quantity, small as it is, should be reduced if we have reason to believe that the quantity of the alkaloid falls short of this small amount.

I am now in a condition to give a distinct answer to the first of the four questions which I undertook to examine. The best *mode* of applying the colour-tests for strychnia is to dissolve the alkaloid in the acid, and then to apply the colour-developing substance; and the best *form* in which the two elements of the test—the sulphuric acid and the colour-developing reagent—can be used is the acid concentrated and the reagent in substance. This appears to be a fair inference from the experiments already detailed. But the experiments teach something more than this. They demonstrate the close dependence of the experiments, if they are to prove successful and characteristic, on the apportionment of the quantity and strength of the reagents. The injurious effect of even moderate dilution of the acid with distilled water shows that it should be applied as the strong acid, and affords a reason for its employment in the most concentrated form; the failure, more or less complete, of a fragment of the colour-developing substance, when dissolved in a drop of water, contrasted with the perfect success of its counterpart when applied in the solid form, is conclusive as to the superiority of the solid to the liquid state; and the perfectly characteristic results obtained with the colour-developing reagents in small quantity, contrasted with the less characteristic results yielded by larger quantities, proves that the quantity of those reagents which we employ is by no means an unimportant element in the success of our experiments.

But though the combination of a concentrated sulphuric acid with the colour-developing reagents in the solid state is that which promises the best results and is most likely to detect strychnia if present, it does not follow that either the moderate dilution of the acid or the use of the colour-developing reagents in solution may not give very characteristic results. Every one, indeed, who has been in the habit of showing the colour-tests for strychnia in the class-room

must know that failures rarely, if ever, occur, whatever the mode and form of application of the tests. But it should be borne in mind that for class purposes it is usual to employ a quantity of alkaloid much exceeding the two-hundredth of a grain contained in the drop of acid as used in the experiments I have been describing. Even with this small quantity of strychnia, solutions of three soluble tests—bichromate of potash, ferricyanide of potassium, and permanganate of potash —in the proportion of ten grains to the ounce of distilled water, give rise, with occasional exceptions, to such a distinct development of the first colour as to leave no doubt of the presence of strychnia, though the after colours were fleeting, variable, and wanting in distinctness. These experiments, then, justify the use of the colour-developing tests in solution as tests for strychnia, but it may admit of doubt whether in medico-legal cases we should be so fortunate as to deal with quantities of strychnia large enough to yield characteristic results with the reagents in a state of solution, however concentrated. I am of opinion, from the experiments I have detailed, as well as from the more general results of my experience of the strychnia-tests, that for medico-legal purposes the colour-developing reagents should always be added to the acid solution of the supposed alkaloid in substance, and not in solution.

My conjecture, that the success of class experiments in which the colour-developing tests are used in solution, depends on the use of a larger quantity of strychnia than the two-hundredth of a grain, was confirmed by actual trial; for I found that with these larger quantities, the tests in solution developed the same characteristic colours, or very similar ones, as those brought out by the same tests in substance.

2. The second question, namely, *Of the colour-tests for strychnia, which is to be preferred?* cannot be properly discussed without some preliminary inquiry into the true meaning of the colour-tests, and some description of the succession of colours which constitute those tests.

The colours produced by the action of the peroxides of manganese and lead, the bichromate of potash, the ferricyanide of potassium, and the permanganate of potash, on a solution of strychnia in strong sulphuric acid, are usually described as deep blue, passing to violet, purple, and red, and, after long exposure, passing to light red.

This description of the colour-tests is sufficiently faithful for every practical purpose, and it applies to all the colour-tests, and to all specimens of strychnia of the usual purity. It admits, however, of being simplified with advantage by

specifying three principal colours passing into each other by insensible gradations. The first and most characteristic colour is a rich blue or purple, the second a claret, and the third a bright orange. The first colour may be compared to the bloom of the Orleans plum, the second to the mulberry, the third to the peel of the sweet orange. This is the succession of colours in the majority of experiments, but the exceptions to the rule are very numerous, and will be presently more particularly mentioned.

When the colour-developing test is applied to the solution of strychnia in strong sulphuric acid, and immediately stirred into it with a glass rod or spatula, the first colour is well marked, and lasts for from half a minute to forty-five seconds; the second colour during one, two, or three minutes; and the third colour for several hours or days. But when the acid solution is diluted with distilled water, or the colour-developing test is applied in solution, the first colour only may be produced, and that indistinctly and transiently, or the test may wholly fail. It will succeed in developing all the colours only when the quantity of the alkaloid is considerable. It should also be understood that, even when the experiment is made in the manner just described, the results are by no means uniform. Some of the exceptions to the rule will appear in the issue of the comparative experiments now to be detailed.

I made two series of these experiments. I first compared the peroxide of manganese with the peroxide of lead. I then made a similar comparison of the three soluble salts, the bichromate of potash, the ferricyanide of potassium, and the permanganate of potash; and having selected from each group the best and most characteristic reagent, proceeded to compare the two so selected with each other.

I made the two series of experiments in the same way. I used in both cases a number of small slabs of white porcelain, equal drops of the acid solution of strychnia ($\frac{1}{200}$th grain to the drop), and equal fragments of the reagents.

(*To be continued.*)

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Journal des Vétérinaires du Midi, Toulouse, Aug., 1861.

TYPHOID FEVER IN SHEEP, &c.

In the month of July the author was summoned to attend a flock of sheep near Montgislard. From the information of the proprietor he learned that they had been attacked since the previous evening by a most fatal malady, which killed them without distinction. He found the sheep in a meadow, under some elm trees—it being July and a tropical heat—the shepherd having determined not to confine them as usual in the close sheds during the night. The first animals he examined presented no dangerous symptoms, the respiration only being slightly increased, but this was explained by the high temperature. The author decided on making a post-mortem examination of some of those which had died, thinking that he had to deal with apoplexy of the spleen (*sang de rate*), but, to his astonishment, in three subjects he opened he found no sign of alteration, except in one which had died some hours previous to his arrival; in this the blood was more fluid, and of a darker colour than in the normal state. Returning to the flock, he could at first perceive nothing particular the matter with any of them, but at last he espied one which hung its head and set up its back, and seemed to suffer internally. On a more attentive examination he found the pulse quick and full, and the mucous membrane of the eye injected in places. This gave him but slender information on the state of the malady. On exploring the vertebral region, and passing his hand down to the hind quarters, a slight tumour was observed. This soon passed off. The animal mixed with the others, and seemed quite well again; it had had an attack which lasted only from seven to eight minutes. Three hours after the same individual had another attack presenting some of the above-mentioned symptoms only. The pulse, from quick and full, had become imperceptible; the mucous membrane of the eye presented purple spots; the shaking of the flank seemed to indicate insufficient power in the respiratory organs. These signs, though very apparent, like the former, were of short

duration, and the animal again became lively, as if nothing had happened; the shivering ceased, the eyes became clear, the pulse, however, remained the same, but the animal began to eat. This was about three o'clock p.m.; at seven the same symptoms reappeared; the respiration became oppressed beyond measure, and death seemed immediate, which, in fact, took place ten minutes after the third attack. Some others were attacked, and died in the same manner, presenting the same symptoms as those which had disappeared from the flock before the arrival of the author. These observations enlightened him on the nature of the disease, inasmuch as he had occasion almost daily to observe a similar affection in the ox (typhoid fever); he therefore prescribed a course of treatment, without losing time to inquire into the cause of the disease, which in the case of the ox had always escaped his investigation. The treatment recommended was to bleed copiously on the first symptoms of the invasion of the malady, to apply strong revulsives to the chest, internally to administer quinine and the acetate of ammonia in wine; the swelling caused by the revulsives to be freely scarified; the animal to be kept on severe, restricted diet. By these means, when taken in the beginning of the attack, the patients generally recovered.

The causes of this fatal malady are to be attributed, first, to the defective construction of the sheepfolds, bad ventilation, accumulation of dung, and the congregation of too many animals in small spaces; to these may be added, sending the flocks to pasture during the heat of the summer in the marshy plains before the sun has risen sufficiently high to disperse the products of decomposed organic matter, which, becoming absorbed by the lungs, vitiate the blood, and thereby determine a miasmatic intoxication.

Annales Vétérinaires, September, 1861.

OBSERVATIONS MADE DURING THE SECOND QUARTER, &c., 1861.

By M. Guilmot, Méd. Vét. du Gouvernement, &c.

Catarrhal bronchitis prevailed in some stables, and nearly all the horses were attacked, the operations of the field being suspended in consequence. The symptoms were—difficult respiration, frequent and painful cough; in some there was a total loss of appetite, while others still fed; a

great number had a hard, strong, frequent pulse, while in others it was slow, but full; the skin dry, adhering to the ribs; no abdominal pain; fæces normal; urine clear; the eyes were often strongly injected, but in some cases preserved their natural tinge, they were never infiltrated, and in no cases have the legs been œdematous; nearly all the patients continue to lie down; the mucous membrane of the nostrils was injected in those cases where the pulse was above the normal rhythm, in the others it was somewhat paler; the auscultation denoted a mucous râle; this was found in all the patients; at the same time there was a copious discharge from the nose of white sticky mucus, adhering at times strongly to the side of the nose; this discharge existed from the beginning of the attack. These symptoms left no doubt as to the malady being catarrho-bronchial, and they further show that all were not affected in the same degree. Some presented the acute type; in others, on the contrary, the disease had been of slow progress, without reaction, with a tendency to become chronic.

Treatment.—Those which had a quick and full pulse were bled, notwithstanding the copious discharge from the nose. This was to prevent the complication of pneumonia. Setons and sinapisms were applied to the sternal region, and kermes mineral was given internally, in doses proportioned to the age and strength of the patient, to which were added warm clothing and a well-regulated diet. To those animals in which the pulse indicated a want of reaction and low vitality, the author found that gum ammoniac with turpentine, in conjunction with vegetable bitters, were the best means to effect a cure.

Stercoral calculus.—In November, 1858, the author reported in the *Annales* two successful cases treated by the strong mercurial ointment, composed of equal parts of lard and mercury, given internally; at the same time he made known the antidote so valuable against the effects of mercury, which is, according to the experiments of Drs. Herpin and Ricord, the chlorate of potass. Since its publication M. Ferage has also made a successful application of this remedy. Three fresh cases have now to be added; they were geldings, eighteen months, two, and four years old; to the first twenty grammes were given in a ball, to the two others thirty. In about from five to six hours the calculi were evacuated, and with them the tympanitis and the anxiety disappeared. All three were attacked by hydrargyric stomatitis, which was removed by forty-five grammes of the chlorate of potass in warm water; to the two horses and to the colt thirty grammes were given at first; after this all went on well. These

horses had been turned out to grass a short time previous to the appearance of the symptoms which denoted the presence of stercoral calculi. These calculi were hard and coated with mucus.

TRAUMATIC TETANUS SIX DAYS AFTER THE SECTION OF THE TAIL.—A farmer perceived two of his horses, a mare and a gelding five years old, to be affected with stiffness in their gait; both were attacked by tetanus, with general trismus, but they still possessed the power of taking a little food: this last circumstance is of great importance, for when the jaws are completely closed the case is generally hopeless. Forty-five grammes of camphor, combined with fifteen of opium, were prescribed every six hours. A profuse perspiration followed the administration of this medicine, and a considerable muscular relaxation was the consequence, which encouraged the author to repeat the medicine in moderated doses, according to the state of the patients, taking care at the same time to keep up the perspiration by means of warm clothing. Aloetic glysters were not neglected. No costiveness followed these large doses of opium, which the author attributes to the fact of his having dissolved as much as six ounces of the sulphate of soda in their drink for sixteen days after the first signs of tetanus. The patients were cured. In all cases of traumatic tetanus the resection of the tail and cauterization or re-opening of the wounds are recommended, a rule which the author has generally adopted, but he has always found it to be followed by an exacerbation of the symptoms which carried the patient off. This resection was omitted in the preceding cases. Is their cure to be attributed to it, or would they have recovered if the resection had been made? It is incontestable that if pain is a great element in the evolution of traumatic tetanus, the addition of it by a fresh operation must aggravate the morbid phenomena.

ACUTE NEPHRITIS COMPLICATED BY HÆMATURIA.—Two cases have occurred, with all the symptoms designated under the name of nephritic colic. The gravity of these cases demanded an energetic treatment; ten pounds of blood were therefore abstracted, bags filled with warm materials were applied to the loins, warm clothing, fumigation, severe diet, nitrated drink at discretion, emollient glysters, &c., were resorted to. Three days after the attack the bleedings were repeated to the amount of from seven to nine pounds on each patient. The urine was found less charged with blood, but deposited more sediment. The subcarbonate of potass was now substituted for the nitrate in the same doses, that is, from thirty to forty grammes in the twenty-four hours. On

the fifth day the pain on pressing the loins was not so great, the urine had lost its redness, and the sediment much of its character. On the eighth day the malady had disappeared, leaving the urine only a little thick; this was remedied by the administration of turpentine, given in a ball. Four days later the animals were convalescent, and placed on half rations.

NEAT CATTLE.—Two cases of poisoning by the *Colchicum autumnalis*. Scarcity and bad quality of fodder induced many of the farmers to make it into manure, and to pasture the cattle on the meadows. This was done at the suggestion of the author, to prevent those diseases so difficult to treat, which are caused by the development of cryptogamic plants on the vitiated forage. One of these meadows abounded with the *Colchicum autumnalis*. Of twenty beasts, two fell a sacrifice to the noxious plant, which was the more fatal as the previous scarcity caused the animals to feed with great avidity; to which must be added debility of the digestive organs from the same cause. The symptoms were—tympanitis, arching of the back, staring coat, the head hanging down, emission of gas by the anus, which was soon followed by a fetid diarrhœa of a black colour, mixed with globules of gas; the urine of a reddish colour; uninterrupted moaning; countenance anxious; pupils dilated; pulse imperceptible; respiration accelerated. The summary of these symptoms left no doubt on the mind of the author as to the termination of the malady. Both of the animals died four days after they had been turned out to grass; the others, which seemed to have eaten less of the noxious plant, were severally attacked with gastritis, but all recovered.

Autopsy.—The rumen was very much distended, and literally surrounded with the leaves of the colchicum; the small and large intestines were injected throughout; the latter contained the diarrhœtic liquid, the fetid odour of which was the same as that disengaged. The kidneys were somewhat softened; the lungs and heart were healthy; the meninges of the brain were injected; the blood-vessels on the outside of the organ were gorged with blood, and of a darker colour than usual; there was no softening of the cerebral substance, but a little fluid of a citron colour was found in the ventricles.

From the preceding it appears that the colchicum acts as a narcotico-acrid poison.

ON PATHOLOGICAL HORSE-SHOEING; OR, THE RATIONAL APPLICATION OF HORSE-SHOES FOR THE TREATMENT OF THE DISORDERS OF THE FOOT AND ITS MEMBERS.

By M. E. Defays, Professor at the Veterinary School of Cureghem-lez-Bruxelles.

This pamphlet on shoeing, by M. E. Defays, is principally devoted to the application of the shoe in a pathological point of view, but his suggestions for the ordinary shoe may be useful. The protection which nature has provided for the foot of the horse and the ox—animals which man has adapted to his service—would not long resist wear and tear if the art of shoeing had not come to its aid. In the application of this mode of protection the form and structure of the hoof, the organs contained in it, the functions of the foot generally, more particularly those of the fore and hind legs, and also the kind of work and nature of the ground, are to be taken into consideration. The shoe should protect the hoof without interfering with the function of the foot: a shoe of equal thickness in all its parts will be the best adapted for this purpose. In making the toe three times the thickness of the heel, as recommended by Coleman, the *aplomb* is destroyed, and the legs are soon ruined. By paring the sole, frog, and bars, as recommended by Miles, the feet are put in an unnatural condition. Reason and experience teach us to spare those parts, the functions of which are to protect the soft parts contained in the horny box or hoof. To preserve the integrity of the form and function of the foot, only that which has been added by growth since the last shoeing should be removed by the knife, and from the frog and sole only those parts which become spontaneously detached. Shoeing, the author says, should be based on science; nothing should be sacrificed to caprice or fashion; rational shoeing is that which unites all the requirements of anatomy, physiology, and economy.

By making a slight alteration in the shoeing, that is, either in the shoe or the preparing of the foot, decided effects are produced on the distribution of the weight, and the action, and more particularly on one part or other of the legs. These physical and dynamic effects are made use of as modifiers of the *aplomb* and the tread, and minister, directly or indirectly, to the treatment of the diseases of the legs and feet; since,

according to either of these, the shoe becomes pathological or corrective.

There is one thing with which we cannot, however, agree. M. Defays says, at page 12, that when a horse is affected with sandcrack, the foot being on the ground, the crack opens. We have always found the contrary; that is, it opens more when the foot is off the ground, and closes when on the ground and the pressure or the weight is on it. Any shoeing smith who has ever tried to put a leather strap tightly round a foot affected with a sandcrack will tell you that, when it is put on, the foot being off the ground, it is loose when the foot is down, and that to draw it tight it is necessary to throw the weight on the foot by holding up the other. When the weight is thrown on the leg the os pedis descends by compressing the subjacent soft parts, the yielding hoof follows the direction of the bone, and, as a natural consequence, the edges of the crack are brought closer together. M. Defays remarks, further on, that he could never understand the practice of putting a leather sole, or any other substance, between the shoe and the foot, after having pared the foot thin for the purpose. He is of opinion that it is much better to leave the natural protection in its integrity, which is certainly preferable to anything man can invent. The generally received opinion, that the hoof dilates in its normal state at its lower surface, which the regular distribution of the nails would prevent, has led, he states, to the invention of the unilateral shoes of Messrs. J. Turner and W. Miles, to prevent contraction, but their application has led to no more favorable result than the articulated shoe, invented for the same object; but it is not to be wondered at that they should have failed, since they were based on the theory of Bracy Clark, to which experience and observation have ere now done full justice. The author has provided a shoe for every possible contingency, at the same time he passes in review all that has been written on shoeing. There are also woodcuts of the most complicated pathological shoes, and there is no doubt that it is a most useful work for veterinary practitioners.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD OCTOBER 30, 1861.

The President, F. R. SILVESTER Esq., in the Chair.

PRESENT:—Professors Spooner and Gamgee, Messrs. Lawson, Cartledge, Mavor, Aitkin, Burley, Wilkinson, Hunt, Gamgee, Robinson, Moon, Jex, Ernes, Broad, Dickens, Field, Kerr, Gabriel, Harpley, and Braby.

The minutes of the last meeting were read and signed by the President.

The balance sheet of the finances of the College being laid before the Council, it was moved by *Mr. Ernes*, and seconded by *Mr. Robinson*, that it be received. Carried.

Moved by *Mr. Gabriel*, and seconded by *Mr. Jex*, that it be adopted. Carried.

It was moved by *Mr. Wilkinson*, and seconded by *Mr. Lawson*, that Bye Law 27 be suspended during the last meeting of the Board of Examiners for Scotland, more particularly that portion of it relating to the time of depositing certificates with the Secretary.

An amendment was proposed by *Professor Spooner*, and seconded by *Mr. Mavor*, that Bye Laws 27, 28, 29, 30 and 31, be suspended during such examinations, which, on being put to the vote, was not carried.

After considerable discussion on the subject, and there being no evidence before the Council, the Secretary not having any documents in his possession respecting the meeting of that Examining Board, as to its illegality,

It was moved by *Mr. Ernes*, and seconded by *Mr. Field*, that the further consideration of Mr. Wilkinson's motion be continued at the next meeting of the Council.

The appointing of a Secretary was next taken into consideration. It was ordered by the Council that advertisements be inserted in the veterinary journals and some of the leading newspapers, stating that the election of that officer would take place at the quarterly meeting to be held in January, 1862, and that all particulars relating to the duties, &c., of the Secretary could be obtained at the College, 10, Red Lion Square, Holborn.

It was proposed by *Mr. Gamgee*, and seconded by *Mr. Burley*, that a committee be formed to consider what steps should be taken to protect the interests of the profession. The committee being named, the motion was carried.

E. Braby,
Secretary pro tem.

Veterinary Jurisprudence.

BAIL COURT.—November 14th.

(*Sittings at Nisi Prius, before* Mr. Justice Crompton *and a Common Jury.*

DALLEY *v* BROWNE.

Mr. Chambers, Q.C., and Mr. J. A. Russell were counsel for the plaintiff, and Mr. Serjeant Shee and Mr. Gray for the defendant.

The plaintiff had formerly been a jockey, but was now a trainer of horses for hunting, and he brought this action to recover £60 from the defendant upon a breach of warranty of a horse. The defendant, a farmer, had a horse for sale, the plaintiff went to see him, and he observed that the horse had been fired, and named that fact to the defendant, who said it was for an enlargement of the coronet, and that the other leg had been fired in order to make both legs alike. The defendant asked £80 for the horse; the plaintiff said that was too much for a blemished horse, but he would give £60 if the defendant would warrant him sound. The defendant refused to accept that sum, and the plaintiff went away. Soon afterwards the defendant wrote to the plaintiff to say he would take the £60. The plaintiff agreed to this, provided that the defendant would warrant the horse sound. The plaintiff went and paid the £60, and received from the agent of the defendant a warranty. This sale took place in December. In the following March the plaintiff had the horse examined, and the horse was said to have been fired for ringbone. The plaintiff then wrote to the defendant to say that the horse was unsound, and after some correspondence the horse was sold at Aldridge's for £22.

The defence was that the warranty did not extend to the firing, as that was to be seen, and that it was confined to those things which were not visible; that ringbone was not one of the diseases to which the warranty extended.

There was contradiction in the evidence.

The jury found a verdict for the plaintiff.—Damages, £39 13*s*.

OBITUARY.

We regret to have to record the death of Mr. Henry Corby, late Demonstrator at the College. Mr. Corby obtained the diploma of the Royal College of Veterinary Surgeons in 1854, and entered shortly afterwards into country practice. In 1857 he was appointed Demonstrator of Anatomy at the Royal Veterinary College, an office which he held until May, 1859, when he left this country for America.

Arriving in the United States, he again engaged in the practice of his profession at St. Louis, Missouri. On the breaking out of the civil war he joined the federal volunteers, and was present at the battle near Springfield, Missouri, fought on the 10th of August. During the engagement he was wounded no less than four times, from the effects of which he died four days afterwards, if not in the arms of victory, still in that which he believed to be the path of duty.

We learn from the *Melbourne Herald*, September 26th, that on the 29th ult. a murderous assault, which, we regret to say, terminated fatally, was committed on Mr. Anthony Green, a well-known trainer and veterinary surgeon, by a jockey named Martin Rice. Green was engaged in superintending the shoeing of a horse when Rice came up and interfered, and told him he knew nothing about it. Green warned him to go away, but as the latter persisted in his remarks Green struck him a blow in the face. After an interval of about half an hour Green, who had left the yard and gone into his house, which was adjacent, returned, and renewed his occupation of superintending the shoeing of the horse, and, while in a stooping posture, he was struck on the head by Rice with a sledge hammer, which fractured his skull. He was carried away, and died the next morning; and Rice, who was arrested shortly afterwards, has since been tried, and is condemned to be executed on Monday next. What makes this lamentable occurrence still more painful is that the deceased has left a widow and children to mourn his violent and untimely end. Mr. Green's diploma is dated May 21st, 1845.

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